products finishing

AUGUST
1959

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finishes on metal products

SAVE with SOAP COATING by Cincinnati

. . . allows dollar per part material saving!

A well-known Chicago manufacturer of large formed metal parts reports big savings made possible by a *Cincinnati* machine which cleans and soap coats stock for deep drawn parts. For example, on bath tubs which are to be porcelain enameled, soap coating before drawing makes possible the substitution of hot rolled steel for the formerly used vitreous steel stock; the saving is $1.00 per part!

The *Cincinnati* Soap Coater cleans the stock . . . applies a uniformly thick coating of drawing compound . . . dries it . . . all automatically.

Sheets are ready for immediate or delayed use without messy manual swabbing. Uniformity in drawing — longer die life—high quality in finished parts — smooth production flow are the money-saving results.

Whether your production requires soap coating or any cleaning and finishing operation . . . *Cincinnati* specialists in savings will show you the way to increased production—better production — at lowest possible costs! Call your representative or write: Cincinnati Cleaning & Finishing Machinery Co., 2008 Hageman St., Cincinnati 41, Ohio.

Cincinnati

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From toys to tractors, painted metal products look better and last longer with Oakite CrysCoat under the paint.

CrysCoating—the conversion of a steel surface to a phosphate surface—creates a perfect base for paint adhesion. Paint goes on in a smooth, serviceable coat. Once on, it stays on.

At the same time, a CrysCoated surface prevents the formation of rust . . . even prevents rust spreading from a deep scratch. Both metal and paint are safeguarded. The product looks better, lasts longer.

Oakite has a CrysCoat process to fit every requirement—for iron phosphate or zinc phosphate coatings, for spray washer or for tanks. Is your particular problem one of economy? Durability? Production bottle-neck? For a helpful answer, ask your local Oakite man. Or write for details to Oakite Products, Inc., 20 Rector Street, New York 6, N. Y.

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years' leadership in industrial cleaning

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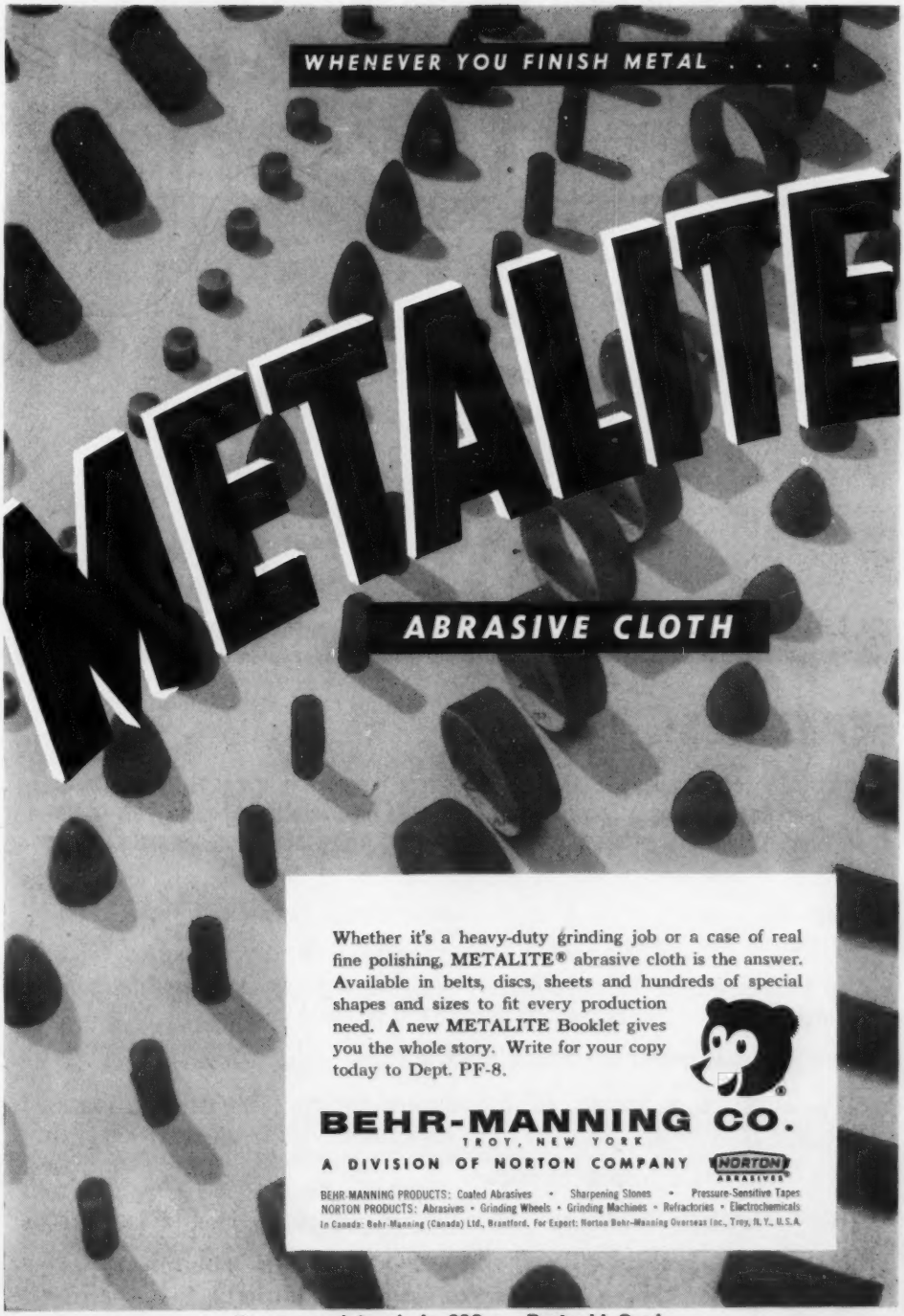
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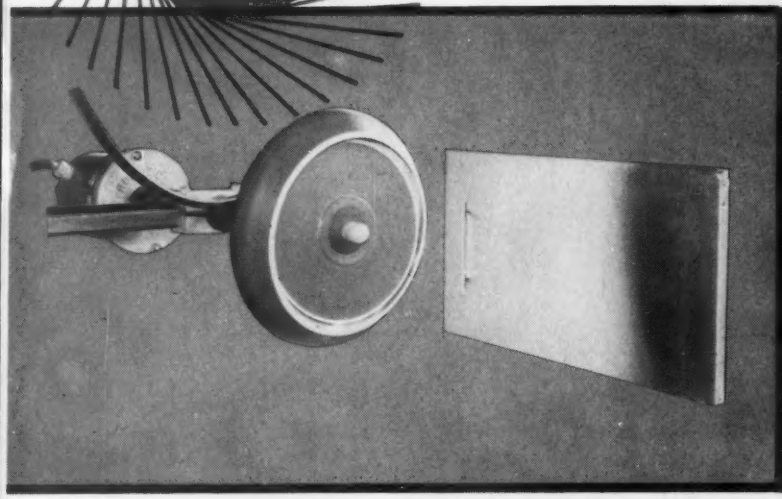

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products finishing

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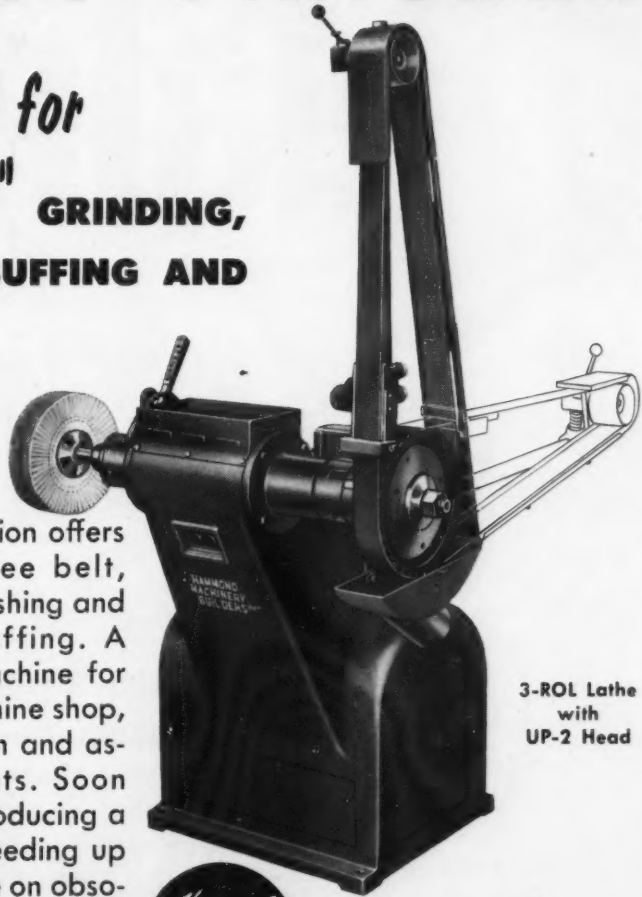

3-ROL Lathe with UP-2 Head

This new combination offers contact wheel, free belt, platen grinding, polishing and deburring plus buffing. A modern versatile machine for your tool room, machine shop, polishing, fabrication and assembly departments. Soon pays for itself by producing a better finish and speeding up operations now done on obsolete machines, grinding wheels or files. Write for catalog.

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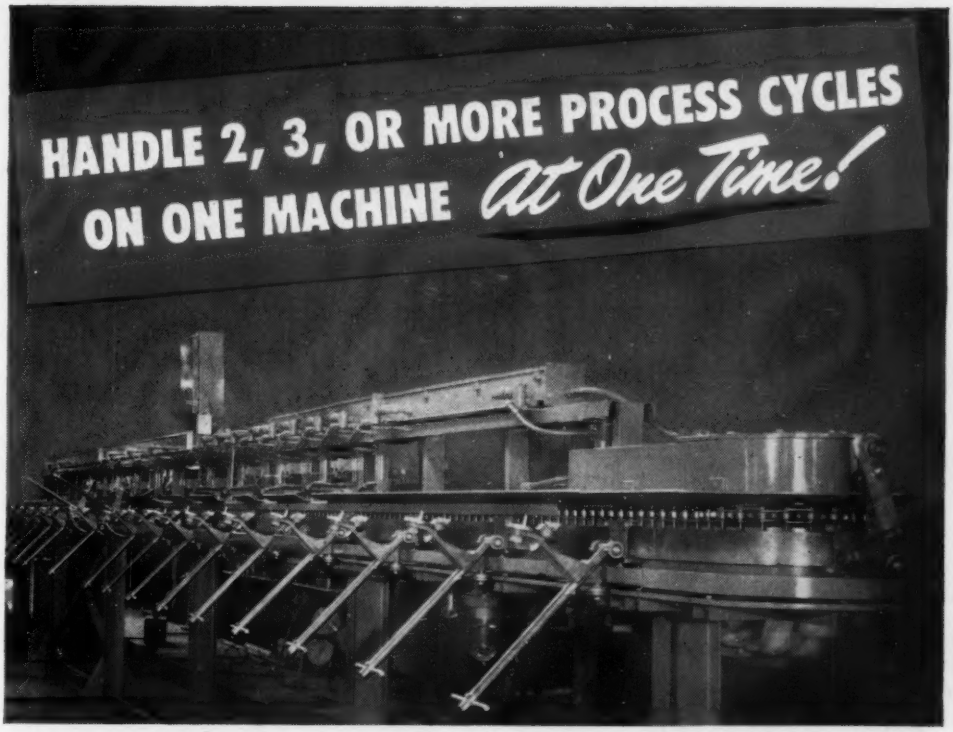

LASALCO'S *Select-O-Matic*

MULTIPLE PROCESS PLATER

Another Lasalco development that offers the industry the last word in **fully automatic** plating!

With the new Select-O-Matic, the operator simply selects the desired process cycle for individual racks, when loading the machine, merely by turning a dial on the carrier. From that point, the rack **automatically** travels through the entire selected cycle without further attention.

A single Select-O-Matic plater, manned by one operator, will handle several various processes simultaneously. Different machines for each process are eliminated—original investment in equipment is greatly reduced—much less floor space is needed—maintenance is cut to an absolute minimum.

The Select-O-Matic is easily adaptable to any operation. Tell Lasalco about your operation and requirements to learn what this new machine can do for your production and profits.

Write Today!

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VAPOR and LIQUID
TIGHT VENTING ASSEMBLY
ON ALL QUARTZ HEATERS

and

NEO-TITE†

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ON ALL METAL HEATERS

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DOW

metal cleaning report no. 2

case histories from your Distributor of Dow Solvents

Flo-ball rocket valves are cleaned ultra-fine with Chlorothene. Fire hazards and toxicity problems are virtually nonexistent.

CHLOROTHENE MAKES ROCKET VALVES READY FOR ORBIT

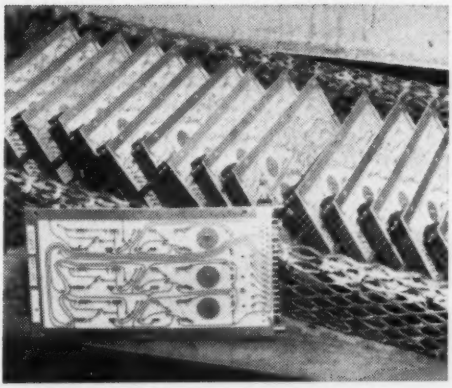
Livingston, New Jersey—An Eastern concern in the business of manufacturing "flo-ball" valves for rockets was faced with a metal cleaning problem. They used an ultrasonic bath to remove grease and other contaminants. Problem: Toxicity and fire hazard. Distributor's answer: Chlorothene® (Dow 1,1,1-trichloroethane, inhibited). Chlorothene did the ultra-fine cleaning job demanded. But, most important, the low toxicity rating of Chlorothene plus the fact that this versatile solvent has no fire or flash point solved the fire hazard and handling problems at the same time! Happy result: Renewed long term valve contract for the New Jersey firm.

CIRCUITOUS ROUTE TO CLEAN CIRCUITS

St. Paul, Minnesota—Electronics manufacturer had to clean rosin flux from electric circuits. Trichloroethylene in this vapor degreasing operation was too slow and expensive. They had previously tried ultrasonics, but that process took the finish off the circuits. The fast, economic answer: Chlorothene, Dow's safer, more effective cold cleaning solvent. Chlorothene speeded production, did not injure the finish, reduced cleaning costs 16%! Now they complete the circuit on time!

COKING PROBLEM ELIMINATED

Machine company tried a number of brands of trichloroethylene to clean small machine parts made of brass, steel and aluminum. With each brand tried they experienced serious coking problems in their vapor degreaser. Periodically it had to be shut down for two or three days while the coal-like residue was chiseled out. The Dow solvents distributor in the area suggested NEU-TRI®, Dow's superstable neutral type of trichloroethylene. NEU-TRI was tested for thirty days. At the end of that time, no coking deposits had appeared, and NEU-TRI has done the job ever since!



Time and time again, Dow solvents distributors help manufacturers improve cleaning and stripping operations. And for two good reasons: (1) Dow offers the widest line of chlorinated solvents for modern industry; (2) Dow backs its distributors to the hilt with technical information and on-the-job help. Dow solvents are made to high purity standards and each is designed to do a specific job and do it well. For help on your metal cleaning problems call on the nearby Dow solvents distributor. His name is listed on the next page.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

FREE . . .
TECHNICAL SERVICE
on 24-hour notice

Your distributor of Dow solvents will gladly help you with any problems you are experiencing with metal cleaning solvents. He can have a trained solvents specialist en route to your plant within 24 hours after your call is received!

CHLOROTHENE®
TRICHLOROETHYLENE
PERCHLOROETHYLENE
METHYLENE CHLORIDE

See Your Distributor of Dow Solvents First!

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Dow

FOR HELPFUL METAL CLEANING INFORMATION

get in touch with your Dow Solvents Distributor

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(C)—Chlorothene®; **(M)**—Methylene Chloride; **(P)**—Perchloroethylene (Industrial); **(T)**—Trichloroethylene

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ST. LOUIS—Missouri Solvents and Chemicals (C M P)

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OMAHA—McKesson and Robbins, Inc. (C M P T)

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EAST PATERSON—Aetna Color and Chemical Company (C M P T)
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NEWARK—National Oil and Supply Company (C M P T)
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BROOKLYN—Enequist Chemical Company (C P)
BUFFALO—Buffalo Solvents and Chemicals (C M P)
BUFFALO—Chemical Sales Corporation (C M P T)
BUFFALO—McKesson & Robbins, Inc. (C M P T)
EDGEMERE—Hogan Industrial Supply (P T)
GLOVERSVILLE—Eastern Chemicals, S. H. Ireland Div. (C M)
KEARNY—American Chemicals Inc. (C M P T)
LONG ISLAND CITY—Peerless Oil and Chemical (C M P T)
NEW YORK—American Chemicals, Inc. (C M P T)
NEW YORK—McKesson and Robbins, Inc. (C M P T)
POUGHKEEPSIE—Duso Chemical Company (C)
RENSSELAER—Eastern Chemicals, Inc. (C M)
ROCHESTER—Chemical Sales Corporation (C M P T)
SYRACUSE—Eastern Chemicals, Inc. (C M)
UTICA—Monarch Laboratories (C M P)

NORTH CAROLINA

CHARLOTTE—F. H. Ross and Company, Inc. (C M P T)
CHARLOTTE—Moreland Chemical Company (C M P T)
CHARLOTTE—Southern States Chemical Co. (C M P T)
GREENSBORO—F. H. Ross and Company, Inc. (C M P T)

OHIO

AKRON—Farley Solvents Company (C M P T)
AKRON—C. P. Hall Company (C P T)
CANTON—Bison Corporation (C P)
CINCINNATI—Amsco Solvents and Chemicals (C M P)
CINCINNATI—Chipman Supply Company (T)
CINCINNATI—Herbert Chemical Company (P T)
CINCINNATI—McKesson and Robbins, Inc. (C M P T)
CLEVELAND—Man-Gill Chemical Company (C P T)
CLEVELAND—McKesson and Robbins, Inc. (C M P T)
CLEVELAND—National Solvents Corporation (C P T)
CLEVELAND—Ohio Solvents and Chemicals, Inc. (C M P)
CLEVELAND—R. W. Renton Company (C P T)
COLUMBUS—McKesson & Robbins Inc. (C M P T)
DAYTON—Industrial Chemical Products Co. (C P T)
DAYTON—Ottoson Solvents, Inc. (T)
LIMA—Thomson Chemical Company (C P T)
TOLEDO—Inland Chemical Co. (C M P)
TOLEDO—Toledo Solvents and Chemicals (C M P)
TOLEDO—M. I. Wilcox Company (C P T)
YOUNGSTOWN—Rhiel Supply Company (C M P T)

OKLAHOMA

OKLAHOMA CITY—Barada and Page, Inc. (C M)
TULSA—Barada and Page, Inc. (C M)
TULSA—Chemical Products, Inc. (C M P T)

OREGON

PORTLAND—Van Waters and Rogers (C M P)

PENNSYLVANIA

CONSHOHOCKEN—American Mineral Spirits (C M P T)
EASTON—Lehigh Valley Chemical Company (C M P T)
ERIE—Monarch Laboratories (T)
McKEES ROCK—Apex Soap and Sanitary Corp. (C P T)
PHILADELPHIA—Alex C. Fergusson Company (C P T)
PHILADELPHIA—McKesson and Robbins, Inc. (C M P T)
PHILADELPHIA—Phillips and Jacobs, Inc. (C M)
PHILADELPHIA—Pioneer Salt Company (C M P T)
PHILADELPHIA—George Senn, Inc. (C M P T)
PITTSBURGH—Carmac Chemical Company, Inc. (C P)
PITTSBURGH—Carman-Pittsburgh Company (C P T)
PITTSBURGH—Dacar Chemical Products Company (C P T)
PITTSBURGH—Ft. Pitt Chemical Company (C M P)
PITTSBURGH—McKesson and Robbins, Inc. (C M P T)
READING—R. W. Eaken, Inc. (C P T)
READING—Textile Chemical Company (C P)
SCRANTON—Scranton Chemical Company (C P T)
YORK—Industrial Solvents and Chemicals (C P T)

RHODE ISLAND

PROVIDENCE—George Mann and Company (C M P T)
PROVIDENCE—Sessions-Gifford Company, Inc. (C M P T)

SOUTH CAROLINA

CHARLESTON—Burris Chemical Company (C P T)
GREENVILLE—F. H. Ross & Company (C M P T)
GREENVILLE—Southern States Chemical Company (C M P T)
SPARTANBURG—Moreland Chemical Company, Inc. (C M P T)

TENNESSEE

CHATTANOOGA—Chapman Chemical Co. (C M P T)
CHATTANOOGA—Wilson Sales Company (C M P T)
KINGSPORT—Chem-I-Dent, Inc. (C P T)
MEMPHIS—Chapman Chemical Company (C M P T)
MEMPHIS—C. P. Hall Company (C M P T)
MEMPHIS—Ideal Chemical and Supply Co. (C M P T)
NASHVILLE—Chapman Chemical Company (C M P T)
NASHVILLE—Wilson Sales Company (C M P T)

TEXAS

AMARILLO—State Chemical Company (C M P T)
AUSTIN—R. M. Hughes Company, Inc. (C M P T)
BEAUMONT—Arthur Dooley and Son (C M P T)
CORPUS CHRISTI—Barada and Page, Inc. (C M)
DALLAS—Barada and Page, Inc. (C M)
DALLAS—McKesson & Robbins Inc. (C M P T)
DALLAS—Texas Solvents and Chemicals Co. (C)
DALLAS—Van Waters and Rogers, Inc. (C M P T)
EL PASO—Baron Chemical Company (C M P T)
EL PASO—Braun Chemical Company (C M P T)
EL PASO—Mine and Smelter Supply Company (P)
FORT WORTH—Barada and Page, Inc. (C M)
FORT WORTH—Worth Chemical Products Co. (C M P)
HOUSTON—Barada and Page, Inc. (C M)
HOUSTON—W. H. Curtain and Company (P)
HOUSTON—Dixie Chemical Company (C M P T)
HOUSTON—R. M. Hughes Company, Inc. (C M P T)
HOUSTON—McKesson, Texas Chemical Division (C M P T)
HOUSTON—Texas Solvents and Chemicals Co. (C M P)
HOUSTON—Van Waters and Rogers, Inc. (C M P T)
LUBBOCK—State Chemical Company (C M P T)
MIDLAND—State Chemical Company (C M P T)
ODESSA—Barada and Page, Inc. (C M)
SAN ANTONIO—R. M. Hughes Company, Inc. (C M P T)
SAN ANTONIO—McKesson and Robbins, Inc. (C M P T)

UTAH

SALT LAKE CITY—Braun-Knecht-Heimann Co. (C M P T)

VIRGINIA

NORFOLK—Taylor Salt and Chemical Company (C P T)
RICHMOND—Phipps and Bird, Inc. (C M P)
ROANOKE—Havnaer Supply Company (C M P T)

WASHINGTON

SEATTLE—Van Waters and Rogers, Inc. (C M P)
SPOKANE—Van Waters and Rogers, Inc. (C M P)

WEST VIRGINIA

CHARLESTON—B. Preiser and Company (C M P T)
FAIRMONT—Fairmont Machinery, Fairmont Supply (C P T)
HUNTINGTON—Cabell Chemical Company (C P T)

WISCONSIN

CHIPPEWA FALLS—Lyons Chemical (C M P T)
LA CROSSE—North Central Chemical, Inc. (M P T)
LA CROSSE—Wisconsin Solvents & Chemicals Corp. (C M P)
MADISON—North Central Chemicals (C M P T)
MILWAUKEE—McKesson and Robbins, Inc. (C M P T)
MILWAUKEE—Wisconsin Solvents and Chemicals (C M P)
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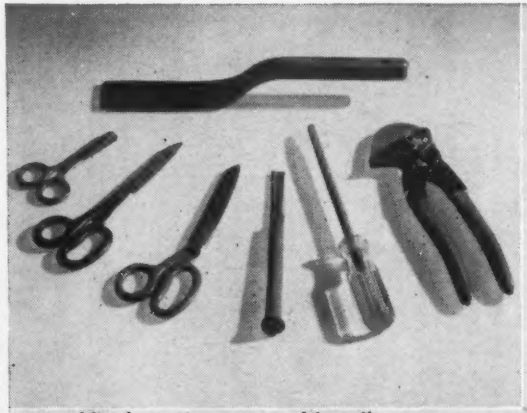

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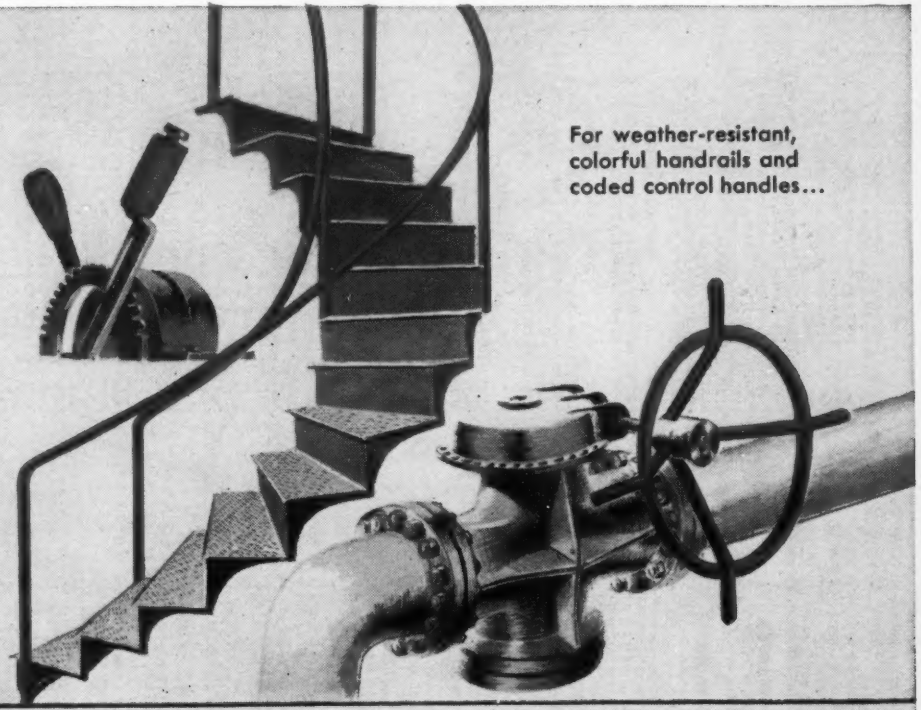

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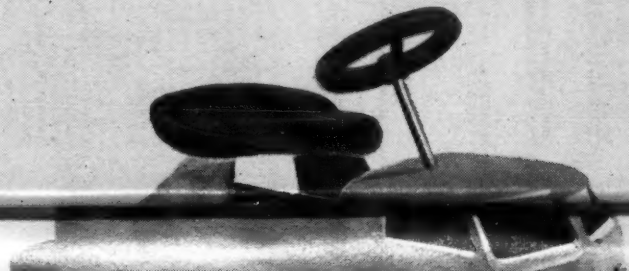

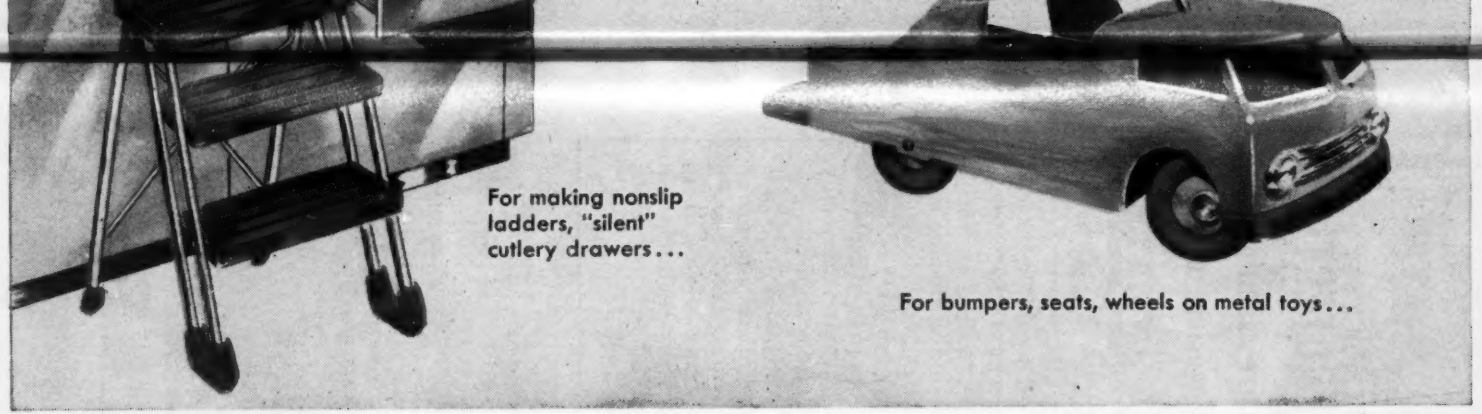

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For bumpers, seats, wheels on metal toys...

Leather-like coatings for metal

You'll see a host of profitable ways to use vinyl coatings when you try their pleasant "feel" and test their tremendous durability. Vinyl coatings feel like leather, wear like flooring. They insulate, control corrosion. Are virtually immune to ordinary chemical attack.

You can apply these resilient coatings to your products in a range of thicknesses simply by dipping them in a vinyl dispersion. A short heat-cure at moderate temperatures "sets" the elastomer and permanently bonds it to the metal.

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Monsanto manufactures a wide variety of plasticizers and Opalon® resins for formulators of these high-quality vinyl dispersions.

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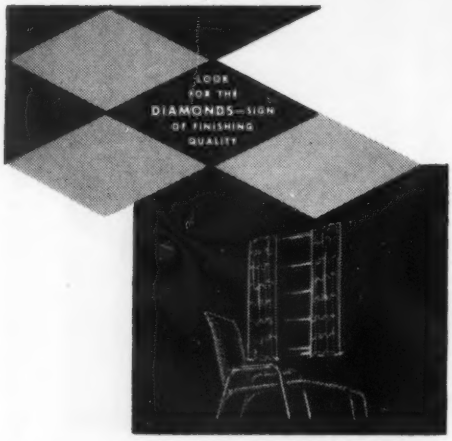

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DOUBLE PROTECTION

against corrosive conditions on aluminum, magnesium or zinc

IRIDITE® Chromate Conversion Coatings

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Simply follow up the IRIDITE process with a fast, easy application of IRILAC . . . give your product extra protection for longer resistance to corrosion, longer storage life and more attractive appearance.

ON ALUMINUM An IRIDITE-IRILAC finish provides longer life for storm windows, outdoor furniture and many other parts and assemblies. Choose from color finishes such as natural aluminum and golden yellow, and a range of colored dye finishes.

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IRIDITE is the tradename for a specialized line of chromate conversion coatings that can be applied to any non-ferrous metal by brush, dip or spray methods — at room temperatures — manually or with automatic equipment.

IRILAC is the tradename for a line of clear protective coatings for all metals. As safe and easy to handle as water, they may be applied by brush, dip or spray methods. No exhaust or special fire protection equipment required.

For complete technical information on IRIDITE Chromate Conversion Coatings or IRILAC Clear Protective Coatings, write for FREE TECHNICAL MANUAL. Or, see the Allied Field Engineer in your area. He's listed under "Plating Supplies" in the yellow pages.

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FASTER . . . CLEANER . . . MORE ECONOMICAL WHEN YOU PAINT WITH THE RANSBURG

Electrostatic Hand Gun

Gator Boat transport trailers are painted in less than half the time —with half the paint—with the new Ransburg Electrostatic Hand Gun.

For instance

Peterson Bros., Inc., Jacksonville, Florida and Ft. Wayne, Indiana, world's largest manufacturer of boat trailers for the Marine Industry, switched from air hand spray to Ransburg No. 2 Process Electrostatic Hand Gun at the Fort Wayne operation in the finishing of their big custom line boat trailers and their Gator line of Marine Trades Equipment.

Paint saving with the Ransburg Hand Gun is estimated at 50 to 60% over the former method. Construction of their products (they use a lot of tubular steel) is ideal for Hand Gun application because of the "wrap-around" characteristic of Electro-Spray.

Painting is done now in an open spray room where two water-wash booths stand idle. Not needed! Maintenance in the paint room has been reduced 75%, for where they used to have to clean up the room sometimes twice a week (mostly on overtime) it now goes two or three weeks without cleanup.

One of Peterson's biggest products now painted electrostatically is a boat transport trailer, Model 807, built to haul six 16-ft. runabout boats. The trailers are over 31-feet long; overall height is 11′-2″ and almost 8′ wide. With air spray, it used to take 8 hours, or more, to paint the big vehicles. Now, with Ransburg No. 2 Process Electrostatic Hand Gun, one operator does the job in only 3½ hours. And, with half the paint!

NO REASON WHY YOU CAN'T DO IT, TOO!

Write for information and literature about this revolutionary, new painting tool. See how the Electrostatic Hand Gun can save time . . . paint . . . and cut costs in YOUR finishing department. If your production justifies conveyorized painting, it'll pay you to investigate Ransburg's automatic electrostatic spray painting equipment. Write for our No. 2 Process brochure which shows numerous examples of modern production painting in both large and small plants.

Call or write **RANSBURG Electro-Coating Corp.**

Box-23122, Indianapolis 23, Indiana

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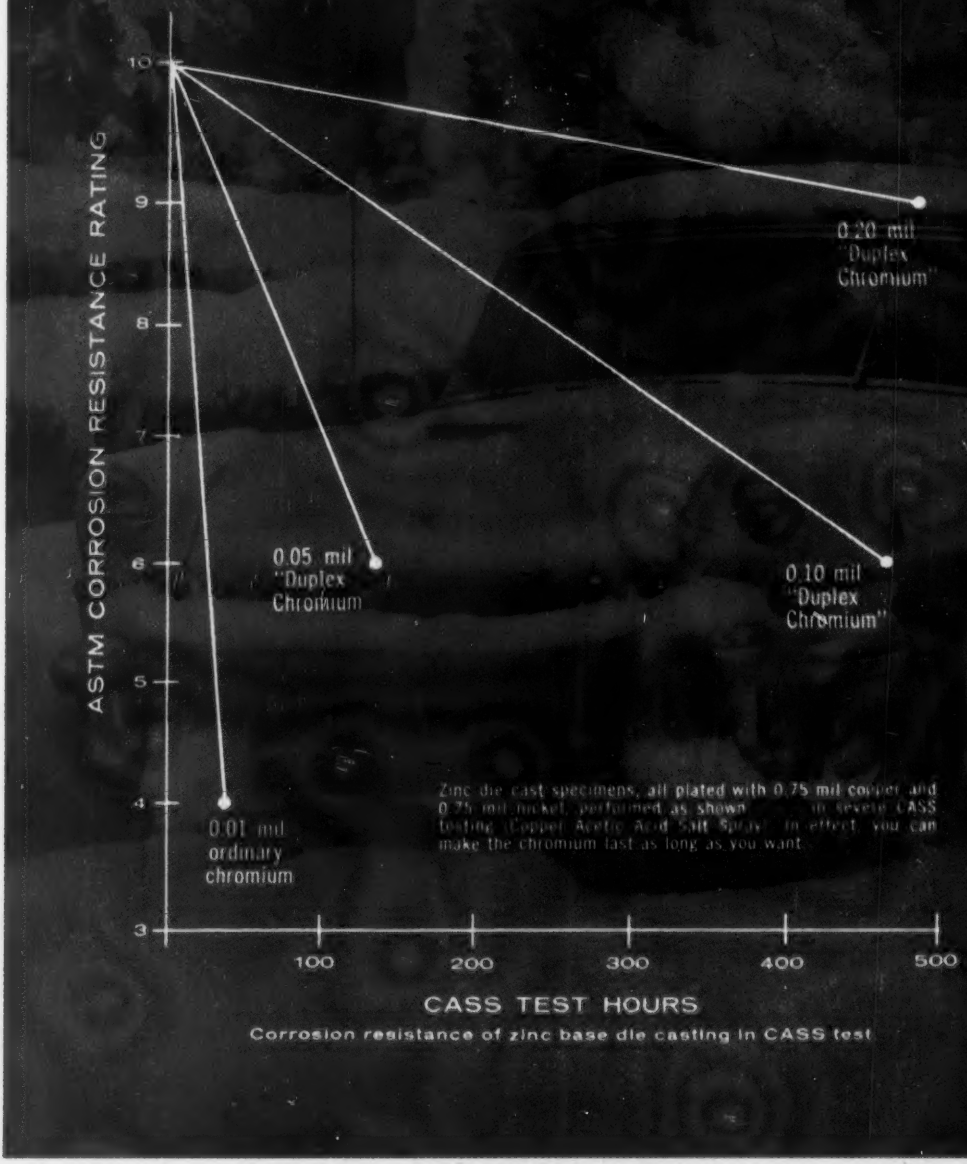
How to get chromium pla



Corrosion resistance of zinc base die casting in CASS test

plating that lasts indefinitely!

M & T "DUPLEX CHROMIUM" can add years to finish life!

Plate chromium thick enough . . . get a crack-free chromium base topped by a special, finely cracked chromium . . . assure more uniform plate distribution . . . and you can make the eye appeal of chromium last much longer than ever before!

You can easily meet all these requirements with M&T's fast processes for plating "DUPLEX CHROMIUM". Note the facts in the chart above. With the same thickness of undercoats in all cases, plating was done using Unichrome Crack-Free Chromium first with its more uniform and crack-free deposit; followed by a deposit of another Unichrome SRHS Chromium with its *controlled* cracking. Just a few minutes additional plating time increases the protection tremendously. For example, in CASS, the time before ASTM rating dropped from 10 (which is perfect) to 8 (still acceptable to customers) was multiplied as much as 20 times!

Plating with M&T "DUPLEX CHROMIUM" poses no production problems. SRHS® solutions successfully deposit chromium on top of a previous chromium deposit. Thus by using *two* tanks, you can adapt present production equipment to give you thicker chromium with less trouble and cost than making changes in undercoats. "DUPLEX CHROMIUM" can handle a mixed variety of work in the same load, without need for frequent current adjustments, without burning on edges or missing in recesses.

Get the full, important details. Send for an M&T plating engineer to explain – or for technical paper. METAL & THERMIT CORPORATION, General Offices: Rahway, N. J.

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In Canada: Metal & Thermit—United Chromium of Canada, Limited, Rexdale, Ont.

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GOOD OPERATION

Cowles NS cleaner first... then barrel plating!

Our advertising agency looked in on this job plating shop with us one day and it didn't take a spyglass to find the Cowles NS drums. And it's no wonder, because this large plater* has been ordering NS and other Cowles cleaners by the truckload for years. He says NS speeds his operation . . . cleans the tough jobs as well as the easy ones . . . eliminates rejects.

As an extra convenience to truckload customers, Cowles ships palletized drums if requested . . . 4 drums per pallet.

*Metal Finishers, Inc., Cleveland, Ohio

Cowles **CHEMICAL COMPANY**

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editorial

What Has Electroplating Done For You?

In delivering the William Blum Lecture to the A. E. S. Convention in June, Dr. William Blum cited education as the most important problem facing the electroplating industry today. PRODUCTS FINISHING believes that one phase of this problem is the need for an educational program to call attention to the practical advantages of electroplating. Designers, engineers and production men must be made more aware of the ways that electroplating can be used to improve efficiency and product—the ways that are available *right now!*

Perhaps one of the best ways of calling attention to the benefits of electroplating is to cite instances in which electroplating has done an outstanding job or solved a knotty problem. With this in mind, PRODUCTS FINISHING is sponsoring an ELECTROPLATING INDUSTRY ARTICLE COMPETITION, described in detail on pages 140 and 141 of this issue.

To the author of the best paper describing how electroplating has made a significant contribution to improving a specific product or how electroplating has improved efficiency or cut costs in a specific plant, PRODUCTS FINISHING will award 500 dollars.

The Competition itself will cause many designers, engineers and production people to think of the ways in which electroplating has made a contribution to the success of their company or industry. The practical information given in the award-winning papers will show people who have to specify finishes and finishing processes that electroplating can often be the best way to finish a product.

In sponsoring this Article Competition, PRODUCTS FINISHING seeks to promote the best interests and future growth of the electroplating industry. After reading more about the rules governing the Article Competition, printed on page 141, you may realize that there is an example of the use of electroplating right in your plant which you can describe in an article.

By telling what electroplating has done for you, you can help yourself and help to promote the entire electroplating industry at the same time.

Ezra A. Blount

—EDITOR

Ford's Experiences with Water-Borne Paints

Water-borne paints have other advantages besides non-flammability. But they require modifications in engineering and control for successful application . . .

By **RUSSEL D. HAMILTON**
Project Engineer, Organic Finishes
Manufacturing Research Office
Ford Motor Company

Paint users and manufacturers have long recognized one of the serious drawbacks in applying industrial finishes: the fire hazard and fumes caused by solvents used to thin paints.*

Water-borne industrial finishes would be a natural to eliminate these difficulties. But until recently these paints have been no more than test-tube curiosities as far as industrial use is concerned.

Solvent-release characteristics were so poor that these paints actually caused rusting when applied to bare steel. In addition, severe foaming was a problem and the available foam suppressors were not particularly effective. Thus, until recently, water-borne paints had little appeal to industry and no concerted effort was made to make them work.

Ford began to investigate water paints more actively after pioneering in water-emulsified sound deadeners. Our paint suppliers were urged to submit such water-emulsion paints as they had developed. These paints were being tested by our Process Development Department when a disastrous fire and explosion struck our Frame Plant in March, 1957.

While none of the water-emulsion paints under test at that time were suitable for immediate use, they were sufficiently promising that development of a practical water paint for frames was put on a "crash" basis.

In cooperation with our vendors, development work continued on a 24-hour-day, seven-day-week basis until a successful water-emulsion asphalt-base paint was developed for frame painting. This product has been used continuously and exclusively by Ford Motor Company since April 15, 1957. It has proved to have other advantageous properties aside from the obvious non-flammability and lack of fumes.

We learned many things during the development of this paint. Our

*See also *Water-Dispersed Paints for Product Finishing*, PRODUCTS FINISHING, page 28, March, 1959.

experience has been extremely helpful in the development of improved water-borne paints for more difficult applications.

Viscosity Control

Viscosity control has always been important in the successful application of conventional paints. Naturally, we attempted to control water emulsions in the same way. We found, however, that the viscosity of these materials was about the same as water when tested in the No. 4 Ford Cup. Other viscosimeters such as the Brookfield and Saybolt —as well as home-made devices— were found to be equally unsuitable. Therefore, we began to control water-emulsion paints by solids determinations. In our first attempts we used the analytical balance and heated to a constant weight. This proved feasible as a control, but was too time consuming, requiring as long as three hours. Tests with the Cenco Moisture Meter revealed that it would produce reliable results in as little as 30 minutes. It was immediately adopted to replace viscosity-control devices.

Galvanic Action

Quite early in the development, we observed another interesting condition. When a sample of water-emulsion paint was left standing in an application system for a period of time, we noted that solids built up around a bimetallic junction. At the time we didn't understand the significance of the condition and took no action.

Later the pipes in a water-emulsion dip tank installation became plugged for no obvious reason. Investigation revealed that the deposit occurred at a bimetallic junction. It was obvious that this formulation was "plating out" in the electrical field created by a bimetal in a conducting fluid. As a consequence we now specify that water-emulsion paints must not deposit on either leg of a copper-steel system immersed in the paint for a period of 24 hours. No trouble has been experienced with clogging in production since the paints have had to pass this test.

Settling and Setting

In theory, little or no difficulty should be experienced with settling when using water-emulsion paints. Our experience, however, proves that while the emulsions are somewhat superior to hydrocarbon solvent paints in this regard, some "settling" does occur.

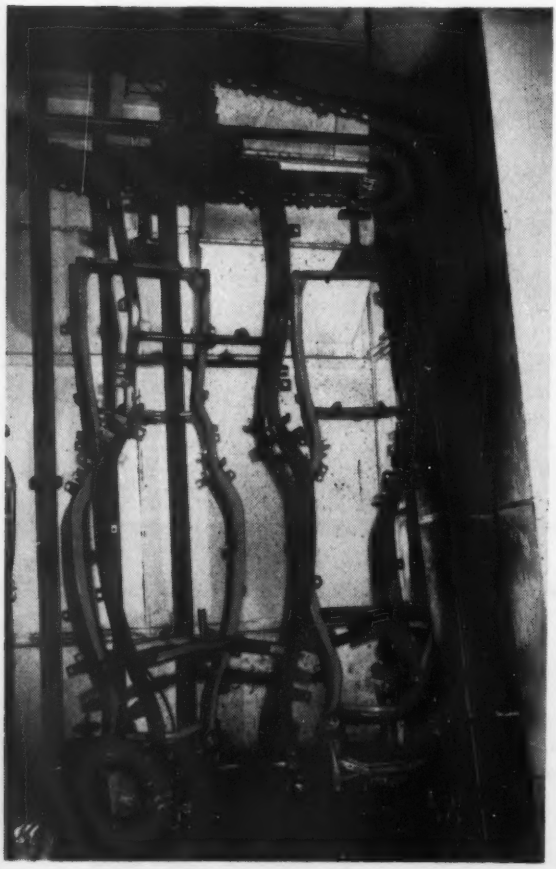
We have reason to believe that

RUSSEL D. HAMILTON has been a project engineer, Organic Finishes, with Ford Motor Company since 1954. Prior to joining Ford he had been associated with Hudson Motor Car Co., New Wrinkle, Inc., Armour & Co., Visking Corp., The Sherwin-Williams Co., Harmon Color Works, and Cook Paint & Varnish Co.

In October, 1958, Mr. Hamilton served as moderator of a panel discussion on "Water Thinned Paints for Industrial Use" presented at the 36th Annual Meeting of the Federation of Paint and Varnish Production Clubs, held in Cleveland, Ohio.

part of the condition identified as settling is a manifestation of another useful property of water-emulsion paints. Experience indicates that when water-emulsion paints lose about 25 per cent of the water, the emulsion inverts and will not re-emulsify. While this condition tends to "set" the paint and minimize dripping of dip-painted parts, it could account for some of the "settling" we have observed in production installations.

Fig. 1—Frames entering (background) and leaving (foreground) flow coat booth where black water emulsion paint is applied.



". . . no major difficulties have been encountered with the paint or the flow-coat system."

This lack of drip permits shorter (and non-enclosed) drip areas, and this in turn permits recovery of valuable floor space. The same characteristic results in more uniform coverage of the part being painted.

pH Control

Most water-emulsion paints require pH control not only to prevent breaking the emulsion, but also to control film thickness and appearance. It should be pointed out, however, that this is not true of all of our current installations. The paint formula, the specific painting process, the degree and kind of cleaning employed and other factors seem to influence the necessity for pH control.

Painting Frames

The flow coat booth and related tanks formerly used for the hydrocarbon solvent type paint were converted to a water emulsion paint with a minimum of changes.

Paint is received from the vendor in tank cars. We unload the cars into a 2,000-gallon mixing tank. City water is added automatically by a metering device in the ratio of one part of water to four parts of paint. The paint flows through this meter first, followed by the water. This flushes any retained paint from the meter.

The paint and water are mixed by recirculating pumps. On demand, the mixed paint is pumped through filters to a 1,200-gallon tank in the flow-coat booth.

Nozzles flow the paint onto the frames, which hang vertically from a conveyor (Fig. 1). Paint then passes through screens and is recirculated at the rate of 60 g.p.m. Although some of the paint has a free fall of as much as 20 feet, very little foam is produced and the small amount of foaming which does occur creates no difficulty.

Equipment for pH Control

This water-emulsion paint is intolerant of oil or grease. As a consequence a spray washer had to be added to the existing system to remove oils and greases. The frame goes into the paint booth while still wet with an alkaline cleaner (the washer has no clear-water-rinse stage). Since 6,000 frames per day pass through this paint system, an undesirable concentration of alkali can be built up in the paint in a relatively short period. This results in a poor and uneven coverage and, if allowed to continue, jells the paint. We learned that pH can be controlled by adding phosphoric acid. A pH of 4.5 to 5.5 is desirable.

Experiments were conducted to calibrate a chemical proportioning pump to add the acid. In production it holds a pH range of 5.0 to 5.5 without difficulty. An automatic pH meter was installed in the system, but it proved difficult to maintain. Because pH control proved relatively simple, the meter was abandoned in favor of hourly checks with pH paper.

Solids are controlled on the job with a Cenco Moisture Meter and are held within the limits of 30 to 31 per cent without difficulty.

Drying

Force drying of the original solvent-type frame paint required 2½ minutes at temperatures above 275 deg. F. The emulsion paint was first tested without changing this heating cycle. More recently, drying has been improved by installing a well-insulated gas-fired oven. After a one-minute drain, frames spend three minutes in the oven (which is heated to 300 deg. F.) and two minutes in an air-seal chamber. This evaporates water from the film and sets the emulsion in minimum time.

Fig. 2—Automatic controls for addition of water and adjusting pH of water emulsion paint used to paint frames for Ford cars.

Approximately 18,000 to 20,000 gallons of paint are used weekly. To date, no major difficulties have been encountered with the paint or the flow-coat system.

Advantages

The quality of the paint on the frames is equivalent or superior to the quality formerly achieved with the hydrocarbon-solvent-type paint. Worker morale has improved because the ever-present threat of explosion and fire has been com-

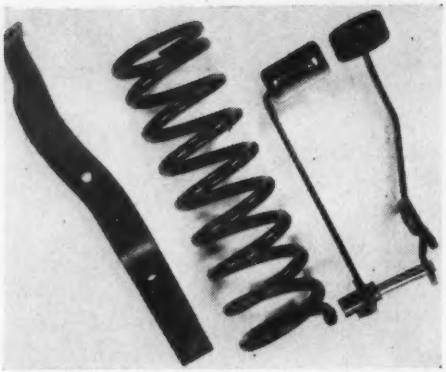


Fig. 3—These parts are dipped in a black water emulsion paint at several Ford plants.

pletely eliminated. Maintenance of the flow-coat system has been simplified and improved, since corrections can be made without dumping the paint or worrying about toxic fumes or fires from welding.

Painting Bumper Brackets, Coil Springs, Brake Pedals

A paint of higher quality than needed for painting frames is required for these parts (Fig. 3). Three Ford installations are using this paint in dip tanks—two in the Monroe, Michigan, plant, and one in the Standard Transmission Plant in the Rouge area. The use of water emulsions for painting these parts has certain advantages over use of solvent-based paints. Some modifications in equipment and process have proven to be desirable (Fig. 4).

In all three cases the dip-painting systems were designed for use of hydrocarbon-solvent-type paints. The same ovens are still being used as were used for drying the solvent-type paints. Baking cycles range from 20 minutes in a gas-fired oven at 400 deg. F. to two minutes in a quartz-tube oven — demonstrating the versatility of this water paint.

Hot Parts Dipped

The non-explosive and non-toxic properties of water-emulsion paints make it possible to dip hot parts into the paint. Thus parts can come out of a dryer that follows the washing machine and immediately enter the dip tank, without first being cooled.

Since the paint is heated by the warm parts passing through, cooling coils and thermostatic controls have been installed to lower the temperature of the paint when a preset temperature is reached.

In the case of bumper arms, the heat left in the parts is from the tempering operation. These parts are tempered at 625 deg. F., quenched, and immediately dipped in the black water emulsion paint (Fig. 6). The retained heat in the part helps to dry the paint. After a drip time of four to eight minutes, the parts are baked at 460 deg. F. for 10 minutes in an air-circulating gas-fired oven.

Temperature rise in the dip tank is controlled by an automatic temperature regulator which actuates flow of mill water through cooling coils on the inner wall of the tank. Skinning during down periods is controlled by admission of steam into the area above the liquid during down periods and weekends.

Coil springs are likewise dipped while still hot. Again the emulsion is cooled by water circulating through coils.

Both tanks hold 1,200 gallons and are enclosed except for the entrance and exit ends. The mix tank for each holds 150 gallons and is directly connected via pumps for circulation.

"The non-explosive and non-toxic properties of water-emulsion paints make it possible to dip hot parts into the paint."

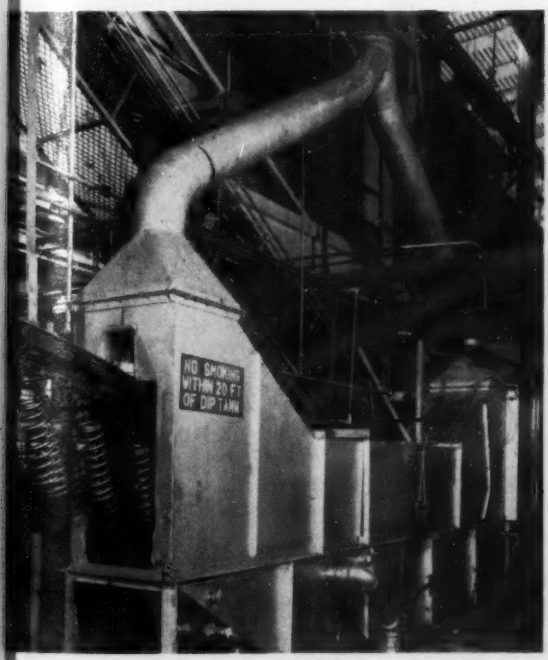
Like the system for painting frames, this system is also controlled by measuring solids content rather than viscosity. Paint mixing and recirculation are similar to the frame-painting installation. The dip tanks can be used continuously for a period of one production year without dropping or cleaning.

Bacteria Growth and Control

This emulsion has a tendency to promote growth of bacteria. This reduces pH and breaks the emulsion. Samples are taken at weekly intervals and analyzed by the Industrial Hygiene Department of the Ford Motor Company. When the bacteria count exceeds a predetermined maximum, a bactericide is added, which kills the "bugs" and helps to keep pH within recommended limits.

Sealing Castings

Use of water emulsions has been very satisfactory in sealing castings. Water-emulsion sealers for castings are lower in cost. They provide a protective coating on the castings and do not clog equipment during machining operations.



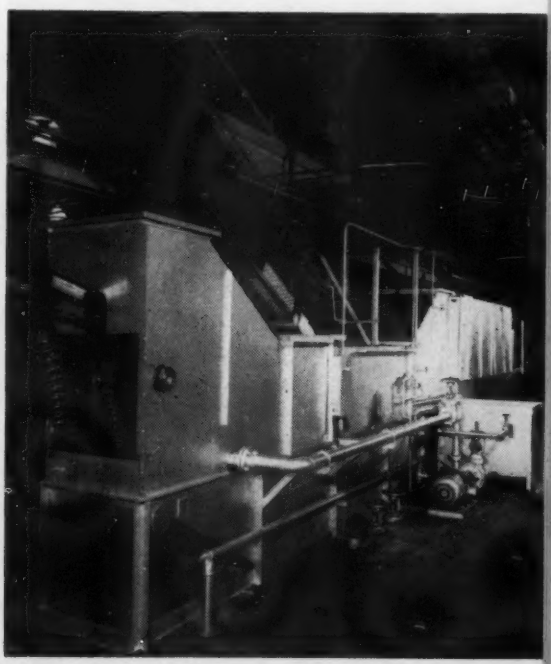


Fig. 4—Photos show equipment modifications that resulted from a change to water emulsion paint. Extensive exhaust ducts needed when paints containing flammable solvents were being applied (left) have been removed after water emulsion paint became standard in this tank. The auxiliary mix tank on the side of the main tank was added (right).

Fig. 5—Brake pedals being dipped in a large tank of black water emulsion paint.

"Use of water-phase paints for industrial painting of such parts . . . is only a start."

Dip-sealing equipment includes an agitator in an offset in the center of the tank. A reservoir attached to this tank is used for make up, filtering and recirculation of the water-emulsion sealer. Drying time is one minute at 450 deg. F. Since September 16, 1957, this system has produced satisfactory sealed castings.

Conclusions

Use of water-phase paints for industrial painting of such parts as described above is only a start. Many developments in this field are now being evaluated. Primer-surfacers for metal, for example, show outstanding adhesion. With proper pigmentation, sanding and drying

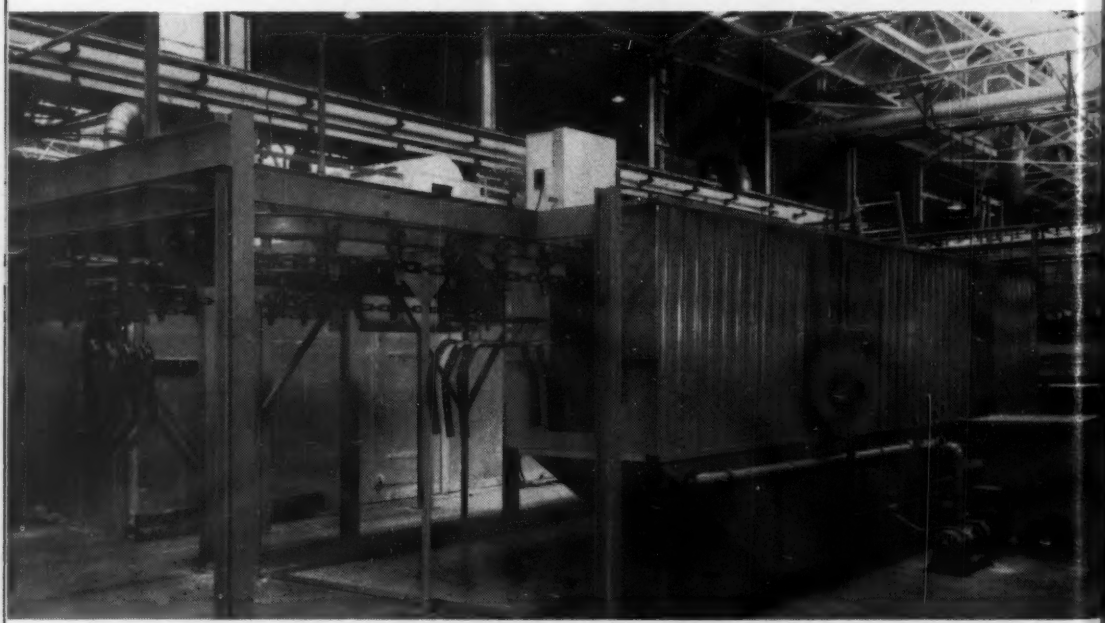


Fig. 6—Dip tank for applying black water emulsion paint to bumper arms. Note mix tank on side of large tank. (Photographs courtesy Ford Motor Co., Dearborn, Mich.)

schedules can be equal to those now used for solvent-type paints.

A limited number of color enamels are now under test. Some of these show outstanding ease of cleaning and resistance to clinging dirt.

"There seems little doubt that the most significant development in the paint industry during the past 10 years has been a broad commercial research into aqueous finishes."* Future developments must be in the direction of lowering costs, for the fire protection obtained cannot be the sole cost advantage at the present higher price.

*Fred A. Stickle, American Cyanamid Co.

★ ★ ★

Smoother Finish for X-Ray Components

Metco Treating & Development Co., Chicago specialist in electropolishing and related processes recently "smoothed out" things for a manufacturer of industrial testing equipment.

The problem here was producing a really critical finish on a copper anode used in X-Ray tubes of industrial testing equipment.

Conventional polishing and buffing had been producing a finish of 15 RMS at best and even with care it was impossible to avoid imbedding compound and wheel particles on the critical target area of this part. Result: completed assemblies were being rejected at the rate of about 30 percent because emission and reflection of ions were not up to par in many cases.

Metco solved the problem by carefully electropolishing the anodes. Tolerances of 0.0005 inch on the machined parts are being adhered to and microinch finish is now a sparkling 3-5 RMS. Rejects caused by poor reflectivity are currently practically zero, the equipment maker reports.

The Art of Color Matching

A 20-page reprint discusses the factors that enter into color matching in non-technical terms that the layman can understand.

Illustrated in full color, this useful booklet contains basic information as well as practical data on color. Includes discussion of physics of color; chemistry of color; behavior of light and colorant; physiology of colors; psychology of color; effect of substrate, size of specimen, age of observer, eye fatigue.

Copies available from PRODUCTS FINISHING, 431 Main St., Cincinnati 2, Ohio. Price, 35 cents.

A Survey of Paint Application Methods

A series of articles on painting methods have been reprinted as a 64-page booklet.

Chapters in the report cover: 1) Use of the Spray Gun. 2) Conveyorized Spray Finishing; Automatic Spraying; Electrostatic Spray Painting. 3) Hot Spray; Airless Spraying; Steam Spray Painting; Spraying Catalyst Coatings. 4) Dipping Methods; Flow Coating. 5) Roller Coating; Tumble and Centrifugal Painting; Silk Screening; Aerosol Painting.

Reprints of *A Survey of Paint Application Methods* are available at 50 cents a copy. Write to PRODUCTS FINISHING, 431 Main St., Cincinnati 2, Ohio.

Finishing-Industry Interviews

Interviews with prominent people in the finishing industry . . .

Walter L. Pinner: Corrodkote and CASS Tests Provide Rapid, Valid Indications of Improvement in Plate Quality

Mr. Pinner, would you comment on the present status of the two accelerated tests which have been developed for testing electrodeposits as a result of the work of A.E.S. Project No. 15; specifically, the Corrodkote Test and the CASS Test? Do you feel that this development is now at the point where the tests are commercially useful, or is further work in the development of these tests necessary? Do you feel that these tests are now to the point where industry can evaluate their usefulness and provide further data for use by the committee?

Mr. Pinner: I feel that both of these tests are distinct advances over anything that the plating industry has ever had before as a means of measuring plate quality. I feel that these tests are stepping stones to tests which may be later evolved. They are not the last word. But they have in their present state of development proved to be useful tools for industry to use as acceptance tests.

They have given us a quick and apparently a valid guide to improvements in plate quality which industry would not have been able to evaluate except over a much longer period of time. The old salt spray test was indefinite; weather exposure took too long. These tests definitely tell us whether the changes we are making in processes and products are good, bad or indifferent, and by knowing that validly, research can be guided. C. F. Nixon, in his presentation at this Convention, stated that the industry has made strides forward already.

I do think that there is a possible misconception on the part of some people to the effect that just because you have a means of measuring something, you have immediately written quality into the product. Of course, that isn't so. As of the moment, industry is being tolerant about this thing, but they are forcing the plating industry to give them better products than have been given

before. This has resulted in some tangible moves on the part of certain segments of the industry. However, I do not feel that industry should write specifications requiring quality that the plating industry as yet does not know how to produce.

I believe that we are far ahead of the position that we would be in if we did not have these tools to use as measuring sticks. I also think that, had these tools been available to us 10 years ago, certain competitive materials would not today occupy the position that they do, and they would not have supplanted plating to a degree that they have.

I have heard comments to the effect that the Corrodkote Test seems to lend itself better to certain systems of plating than the CASS Test and likewise, that the CASS Test seems to do better in other cases. Is there a possibility of industry preference in the use of the two tests?

Mr. Pinner: I think that some of this confusion results from the fact that the plating industry does not know how to make standard quality plated coatings even in the case of laboratory panels. I believe that, if the industry knew how to make completely standard panels, some of this confusion would be eliminated. I believe that each test has its merit and, in the case of the CASS Test, I believe that it can be used to predict the service life of parts for a period longer than one year, whereas the Corrodkote Test, for the moment, only goes as far as one year's service.

As chairman of the committee which has developed these tests, I

Walter L. Pinner, a past president of the American Electroplaters' Society, has been active in the electroplating and finishing industry for a number of years. In connection with his activities in A. S. T. M. Committee B-8, in February, 1956 he organized and served as chairman of a symposium on "Properties, Tests, and Performance of Electrodeposited Metallic Coatings."

More recently he has served as chairman of A. E. S. Research Project No. 15 under whose guidance and direction the Corrodkote and modified salt spray tests were developed.

Mr. Pinner is manager of Electroplating Development, McGean Chemical Co., Cleveland, Ohio.

am still of the opinion that both tests arrive at the same answer. They are both fundamentally the same thing, and if we were able to make a standard product with which to evaluate these tests, the confusion you mention would not exist.

Dr. F. A. Lowenheim, in his paper, mentioned that, since tests were developed to predict the service behavior of decorative copper-nickel-chromium or nickel-chromium deposits exposed to a typical winter in Detroit, data presently available do not indicate whether these tests will predict the service behavior of other coating systems. Would you care to comment on that statement?

Mr. Pinner: From a committee information standpoint, I would say that neither test has been proved to the satisfaction of the committee to be applicable to such systems as

bronze-nickel-chromium, white brass, and so forth. However, there are scattered reports to the effect that each test is applicable for the evaluation of anodic coatings on aluminum, stainless steel, and white brass on steel when white brass is used alone. These, however, are scattered reports and final committee approval has been based only on copper-nickel-chromium or nickel-chromium as deposited over steel or zinc base die castings.

★ ★ ★

A. A. B. Harvey: Paint Finishes for British Motor Cars Involve More Hand Work; Appearance Standards Are Higher

Mr. Harvey, would you comment on the differences between British and American organic finishing practice?

Mr. Harvey: The large scale of production in the United States and the relatively higher cost of labor compared with the United Kingdom have led to the development and use of more automatic methods in the U. S. In particular, electrostatic spraying and airless spraying are more common. In the U. K., however, use of electrostatic coating is becoming more prevalent. Among the items I have seen sprayed electrostatically at home are car bodies, tractors, wheels, refrigerators, and so on. Mechanical automobile spraying is perhaps the most commonly used of all the methods of automatic spraying.

A. A. B. Harvey is director of technical services, Sunbeam Anti-Corrosives, Ltd., West Molesey, England. At the recent International Conference on Electrodeposition and Metal Finishing, he served as session chairman for one of the sessions and also presented a paper entitled, "The Accelerated Weathering of Organic Finishes." Mr. Harvey is slated to be the next president of the Institute of Metal Finishing in England.

Dipping and flow-coating are widely used, and roller coating and curtain coating are employed for specialized work.

Most automobiles are finished by the following method: phosphatize; apply primer-surfacer; wet sand; apply sealer coat; sand; apply alkyd enamel; bake. Some manufacturers omit the sealer coat. Vauxhall Motors, Ltd., follows the General Motors use of cellulose lacquers.

Acrylics are being used experimentally. Epoxy resins are used widely in the refrigerator trade and as collapsible tube finishes, as well as in the same applications as in the United States. Isocyanates, vinyl plastisols and organosols are slowly coming into use.

We have a less realistic approach to appearance standards, so that immaculate appearance requirements dominate the organization of the paint shop. This means that more hand work is required, and more hand rubbing done in the hard-to-finish areas. Abrasive cloth and paper with finer grit are employed.

For the most part, six-stage zinc phosphate spray systems are used for pre-paint metal treatment. For interior parts, the four-stage polyphosphate processes are employed. Cold phosphatizing and peroxide

accelerated solutions are in production use. There are few five-stage spray plants. Mechanized dip phosphatizing for even very large articles is common.

★ ★ ★

T. Tohei; Prof. M. Nakamura: Demand for Electroplating Must Increase Before Japan Can Adopt Automatic Equipment

What are your impressions of the many plants you have visited since you have been in the United States? You have been in the United States since April 20 and have visited 18 or 20 electroplating plants of various kinds.

Mr. Tohei: Our impressions are that American finishing plants and operations are very highly mechanized, or automated. The contrast between the American factories, which are so highly mechanized, and the Japanese factories, where hand operations are still in general use, is quite sharp.

Of the many things which you have seen, what can be applied to the Japanese electroplating industry most successfully?

Prof. Nakamura: Naturally, the Japanese electroplating industry could profit by the adoption of mechanical or automatic plating and finishing equipment. However, this will not be possible unless production volume and machinery costs reach a point where it will be practical to use automatic machinery. At this time a great deal of attention is being given to the development of automatic plating equipment in Japan and a great many people are concentrating on this subject.

Nickel plating, copper plating and particularly buffing systems have not yet been mechanized in Japan. Therefore, it would be most advantageous to be able to take these processes into the Japanese copper and nickel plating plants. The mechanization of these processes is still in the development stage or in the early stages of plant use.

Japanese visitors present for the International Conference included T. Tohei, president of Tohei Plating Co., Ltd., (seated, right), and Professor M. Nakamura of Kanto Gakuin University (standing, left). These gentlemen discussed their impressions of the plating industry in the United States with Ezra A. Blount, editor of PRODUCTS FINISHING (seated, left) and contrasted conditions here with those in the plating industry in Japan. Miss Yoshiko Moriyama served as interpreter.

"We would like to install mechanical buffing equipment in our plants."

Do I understand correctly that you think mechanical buffing would be of great assistance?

Mr. Tohei: Yes, that is one field in which we are quite interested. There are few factories which now use mechanical buffing equipment. We would like to install mechanical buffing equipment in our plants.

Do you think that there is application for the liquid spray buffing compound applying equipment and liquid buffing compounds in Japan?

Prof. Nakamura: In the future, when mechanical buffing equipment is installed, the liquid buffing compounds will, of course, be used.

There is a great difference between the business and economic system of the United States and Japan. Until such time as this situation is changed, the manufacturing processes cannot be the same in the two countries. There is, for example, a great difference in labor costs and the demand for the manufactured and finished products.

At the present time, the production volume on many products is not such that automatic equipment can be justified. Therefore, there are very few of the principles of automation and the use of automatic equipment that can be adapted for use by the Japanese electroplating industry at this time because of the basic difference in the economic structure of the two countries. Eventually, we expect to be able to use more automatic equipment in Japan, but this takes time and cannot be accomplished too quickly.

Will it first be necessary to raise the wages paid to the people in the Japanese electroplating industry?

Prof. Nakamura: Yes, the basic step must be to raise the wages. First, however, the demand for electroplated products must be increased. Once an increased demand has been established, automatic equipment can be installed and higher wages can be justified. At the present time, the demand is not sufficient to justify automatic equipment.

How can use of and demand for electroplating be increased?

Prof. Nakamura: Increased demand will have to come from Japan itself and from increased exports.

I believe, Mr. Tohei, that you are preparing a report of your trip. I wonder if you could make a few comments as to the highlights which you plan to include in your report?

Mr. Tohei: In the report, we will stress the point that the productivity in the plating industry in Japan is quite low compared to the plating industry in the United States, and include also the contrast in the mechanical equipment used in each country.

Has the information which you have obtained on plating quality standards in the United States been of value to the Japanese electroplating industry?

Mr. Tohei: It is our impression that the American electroplaters are stressing durability of plated fin-

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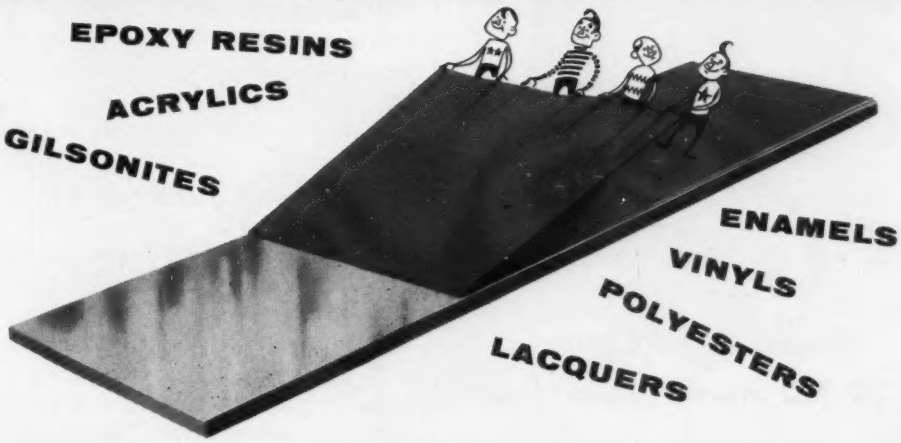

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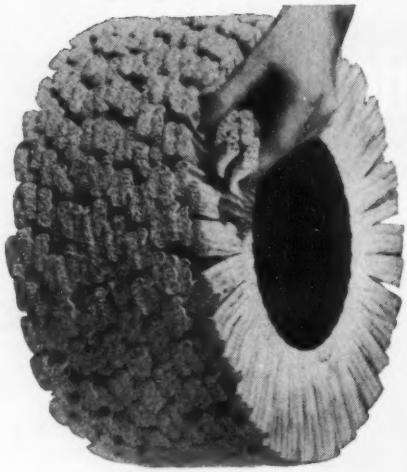

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ishes, whereas in Japan appearance of the finished part is stressed. In the future, both durability and appearance must be stressed and taken into consideration in all inspection and quality-control standards.

Prof. Nakamura: The phase of the finishing cycle which demands the most attention in Japan is the pre-treatment cycle. In the United States, we have observed that machines are used for pre-treatment as well as plating, while in Japan pre-treatment is still largely by hand.

In the United States the supplier companies do a vast amount of research on electroplating processes. Is this also true in Japan?

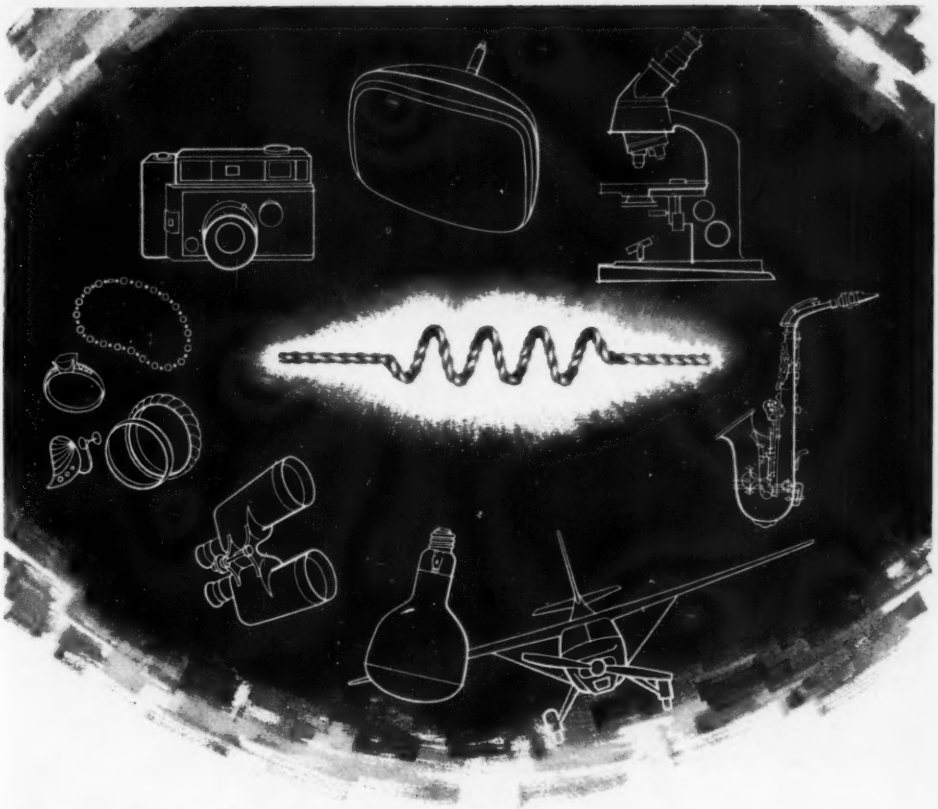
Prof. Nakamura: That is a very great handicap in Japan at the present time. Very few technical people are employed by the supplier companies. Suppliers must engage in research and offer technical aid.

While you have been in the United States, you have seen four research laboratories operated by four of the leading suppliers of electroplating processes. What did you think of these labs?

Prof. Nakamura: The laboratories of supplier companies here in the United States are so well equipped that they compare with the best University laboratories in Japan.

What are your general impressions of the Convention and Industrial Finishing Exposition?

Mr. Tohei: We have been quite impressed with the number of people who are attending this Convention and Finishing Exposition. We feel that in Japan it would be impossible to have just one segment of industry, the electroplating industry, sponsor an exhibit this large.



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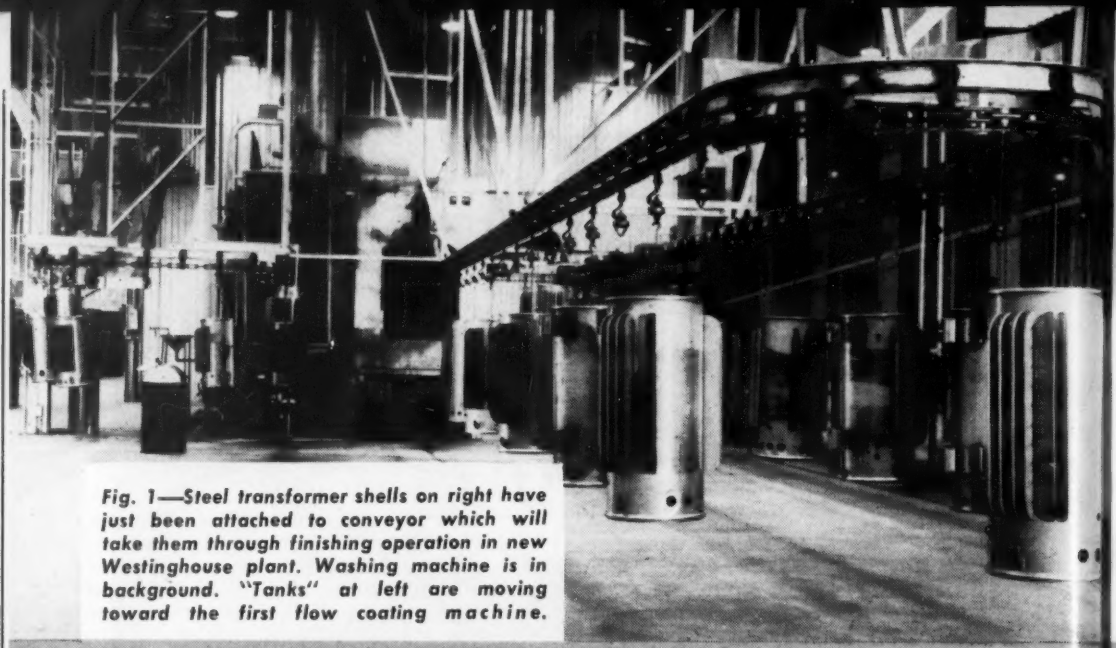


Fig. 1—Steel transformer shells on right have just been attached to conveyor which will take them through finishing operation in new Westinghouse plant. Washing machine is in background. "Tanks" at left are moving toward the first flow coating machine.

Hybrid Painting Machine Flow Coats, Sprays

New complete system includes flow coaters equipped with spray guns to paint depressions . . .

If you have a problem of painting exteriors and interiors of metal containers on a volume basis —and if the vessels vary in diameters and lengths, and even include recesses that serve as paint traps— you may get a few pointers from a new automatic finishing system installed in Westinghouse Electric Corporation's recently completed, Athens, Ga., distribution transformer plant.

The 560,000-square-foot plant includes equipment that applies paint by a combination of spray and flow coating methods. This equipment is used in painting recessed-bottom steel transformer shells with a special wash primer and three additional topcoats.

Designed, engineered and manufactured for Westinghouse by The R. C. Mahon Co., Detroit, the complete finishing line was laid out

to dovetail into the company's straight-through-flow production line—fed by three major feeder areas: tank and core fabrication and coil production.

It completely surface treats, paints and dries the steel covers and miscellaneous parts of the transformers, as well as the steel shells, which later are loaded with the required core-coil assemblies. All painting operations are confined in an area 240 by 50 feet.

Location of the finishing system's 90-foot, three-compartment baking oven on the roof of the one-floor plant saved floor space.

The steel shells are painted in four combination spray-flow coating machines. These include a coating system which Mahon engineers say is the first of its kind ever installed —involving paint application by spray and flow methods simultaneously, and spray coating of recessed areas which would collect paint.

The machines are designed to keep up with the line's speed of five f.p.m. and to apply paint films that vary in thickness less than 0.3 mils from top to bottom of each steel shell.

Shells vary from 12 to 22 inches in diameter, and are from 20 inches

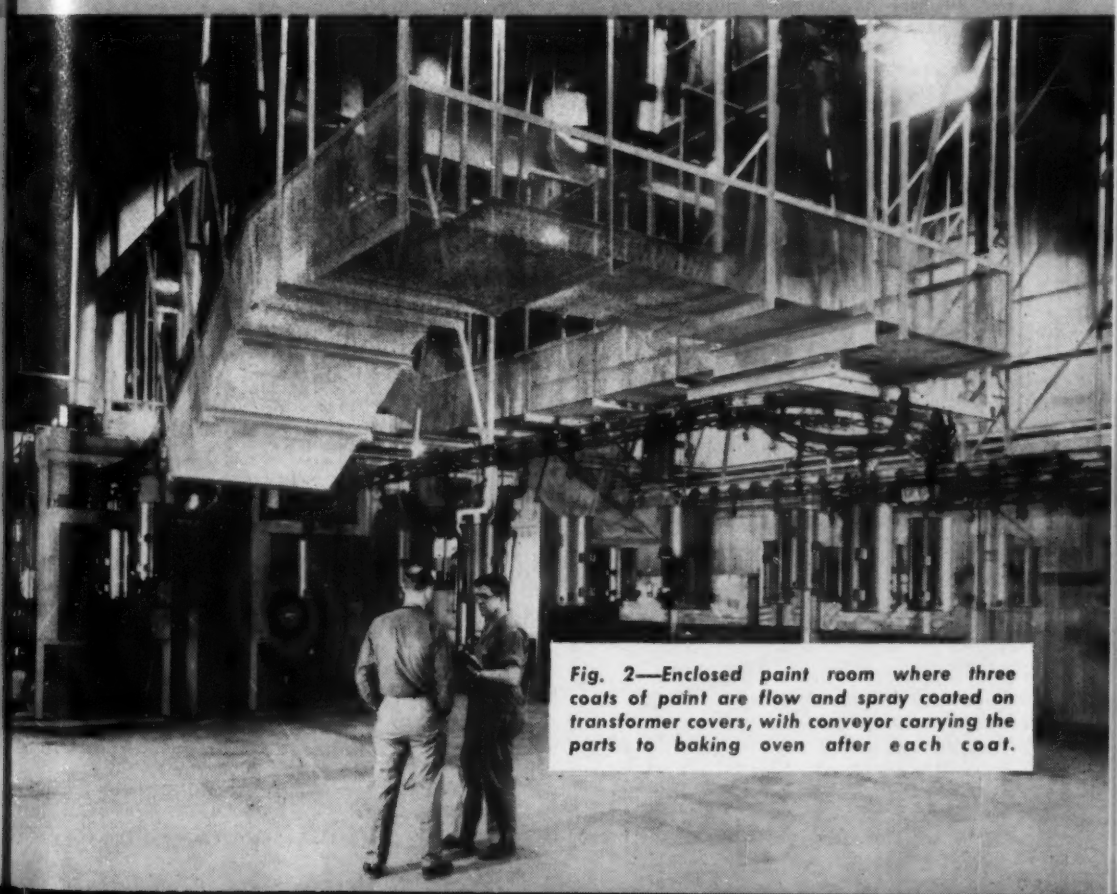


Fig. 2—Enclosed paint room where three coats of paint are flow and spray coated on transformer covers, with conveyor carrying the parts to baking oven after each coat.

"Three flow coat machines apply the paint."

to 4 feet in length. Painting consists of applying a primer coating, containing corrosion inhibitors; an intermediate finish which includes tiny over-lapping mica flakes that act like shingles on a roof, and a finish coat that prevents the passage of ultraviolet radiation.

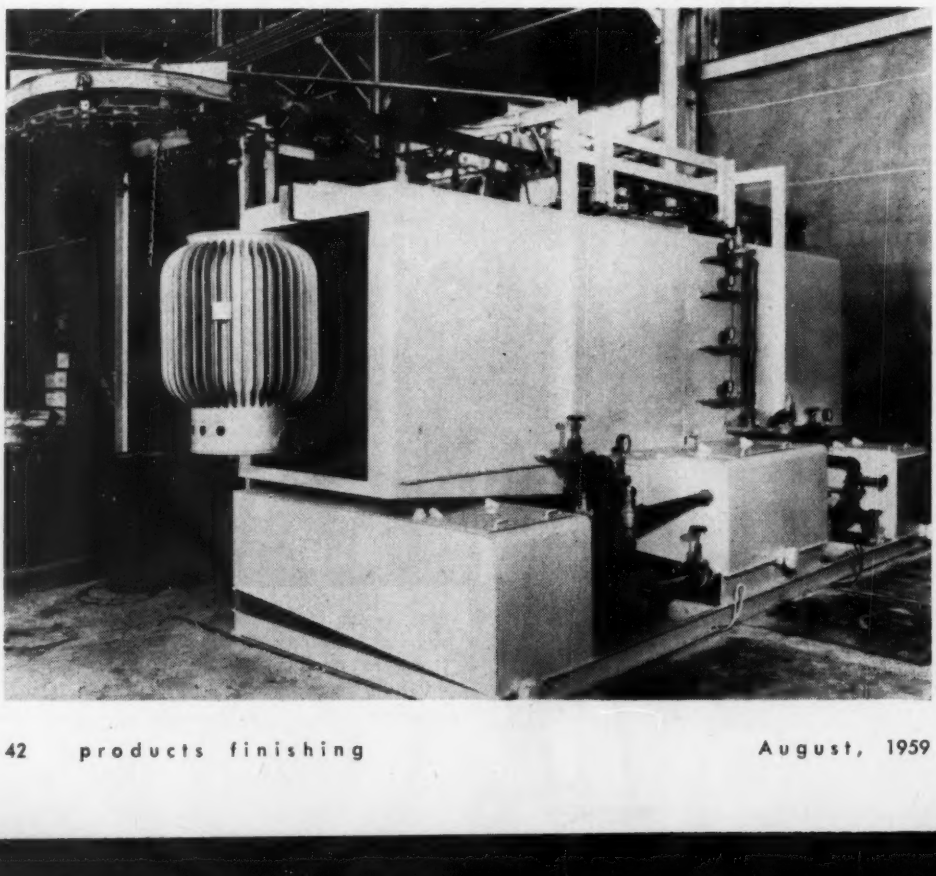
Finishing Process

Completed shells from the fabricating line are fed on a roller conveyor to the loading point of the finishing line. There they are lifted pneumatically and hooked onto a 2600-foot-long overhead trolley conveyor. Since one end of each shell is closed to form the bottom, the shells are loaded upside down onto the conveyor, and carried in that manner through the complete finishing cycle.

The shells travel to the washing machine, where they are spray washed with an emulsion-type alkaline cleaner, drained and rinsed. They then enter an oven where the water is dried off. After cooling, they enter the first of four automatic flow coat painting machines, where they are given a phosphate coating with a wash prime solution.

All outside and inside surfaces of the shells are coated with wash primer, which is pumped through

Fig. 3—Four flow coating machines like the prototype below are used in painting transformer covers. Note how the conveyor chain is suspended to keep it out of the chamber.



nozzles onto the work. The work then travels through a drain tunnel and enters a dry-off oven, remaining there for a few minutes. On leaving the oven, the shells are allowed to cool while they travel to the three-coat painting section.

Three flow coat machines apply the paint. The first machine applies a prime coat to the shells, the second applies the intermediate film and the third applies the final gray top coat.

The prime and intermediate paint coats are applied to the outside of the shells and the shell interior is coated with gray to cover unpreventable splashing of previous coats through punched holes in the shell walls.

Like the wash prime-phosphate machine, each flow-coat machine has two spray guns which are actuated by the work hook to paint the recessed shell bottoms.

The interiors of the shells are painted only when the work travels to the final coating machine. This unit applies paint through a flow-coating nozzle shooting upward into the upside down shells. Height of the paint stream from this nozzle is controlled by a valve to allow painting up inside the shells to any desired level. The nozzle goes into action only when a shell is spotted directly over the nozzle.

Except for bottom nozzles installed with the wash prime and final coating machine, all four flow coating machines are basically the same. The flow coating chamber of each is supplied by two tanks, one containing solvent, the other holding the paint. Each holds 250 gallons. The paint while in the paint tanks is circulated continuously to prevent settling.

After each flow-coat paint application, the shells are conveyed through a drain tunnel and up to the roof-top, direct-gas-fired, 90-foot bake oven, where each of the three paint coats is baked.

The nozzle system of each machine consists of a vertical riser on both sides of the painting station with eight ¼-inch-diameter soft copper tubes in each riser. The tubes can be bent to any position for complete coverage, and are set to paint any of the different shell diameters and lengths, as well as the

Fig. 4—Interior of one of the flow coating machines. Final machine has an extra nozzle shooting upwards to coat interior of the shells. (Photographs courtesy The R. C. Mahon Company, Detroit 34, Michigan.)

transformer covers, which are held on "Christmas tree" hooks. Paint pressure from each nozzle can be adjusted from 0 to 10 p.s.i. by shut-off valves. While in the painting zone, the shells are automatically spun to obtain complete coverage. Spray patterns of the guns are changed only when shells of a different size are being processed.

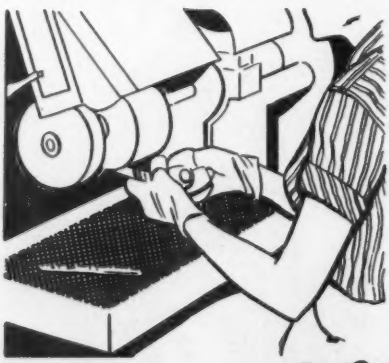
Because paint temperature increases in pumping, a refrigerating unit is used to cool the paint to optimum flow-coating temperature. An automatic viscometer measures and records the paint viscosity at two-minute intervals, adding solvents as required.

Paints and solvents for the machines are premixed in a volatile storage area next to the main building, then pumped to the machines. The mixing system consists of eight agitator-type tanks, each holding 125 gallons. A pump for each of the machines can draw from either of two tanks, so that while paint and solvent are mixed in one, the other delivers paint to the machine.

★ ★ ★

Papers on Viscosity Determination and Control. A data sheet (091-B) listing reprints of technical papers on viscosity determination and control is available from Brookfield Engineering Laboratories, Inc., Stoughton, Mass. The data sheet lists 26 technical papers on a variety of subjects from food processing to ceramics, and also describes several books on viscosity. The data sheet may be obtained by writing Brookfield Engineering Laboratories, Inc., Stoughton, Mass.

PROTECT FINE PLATED SURFACES



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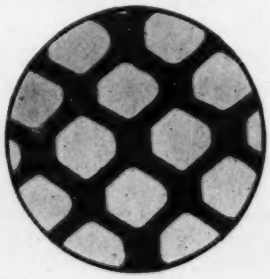

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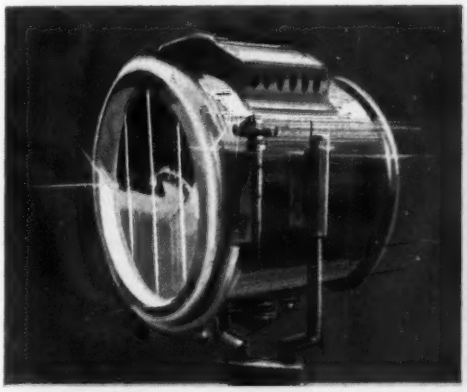
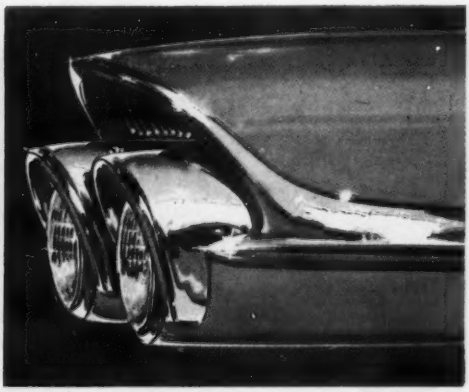
Half a century apart... both finished by Acme machines!



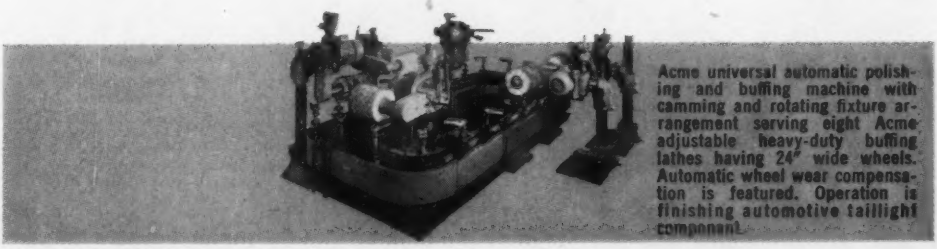


Even back in 1910, part of an owner's pride in his car lay in gleaming brightwork. But polishing and buffing the shiny metal that he loved so well caused manufacturers plenty of headaches. And so they turned to Acme—and Acme has continued to supply the answers to their finishing problems.

Today, Acme engineers combine standard units with a variety of accessories to make custom polishing and buffing machines. Large corporations and small job shops alike use Acme machines to reduce rejects, increase production volume, machine finish odd-shaped pieces.

Every year Acme encounters new finishing requirements—each an individual problem—and solves them. Chances are, we can solve your problem, too. Send for our 16-page catalog today.

50 years of *Polishing Off* your finishing problems



Acme universal automatic polishing and buffing machine with camming and rotating fixture arrangement serving eight Acme adjustable heavy-duty buffing lathes having 24" wide wheels. Automatic wheel wear compensation is featured. Operation is finishing automotive taillight component.

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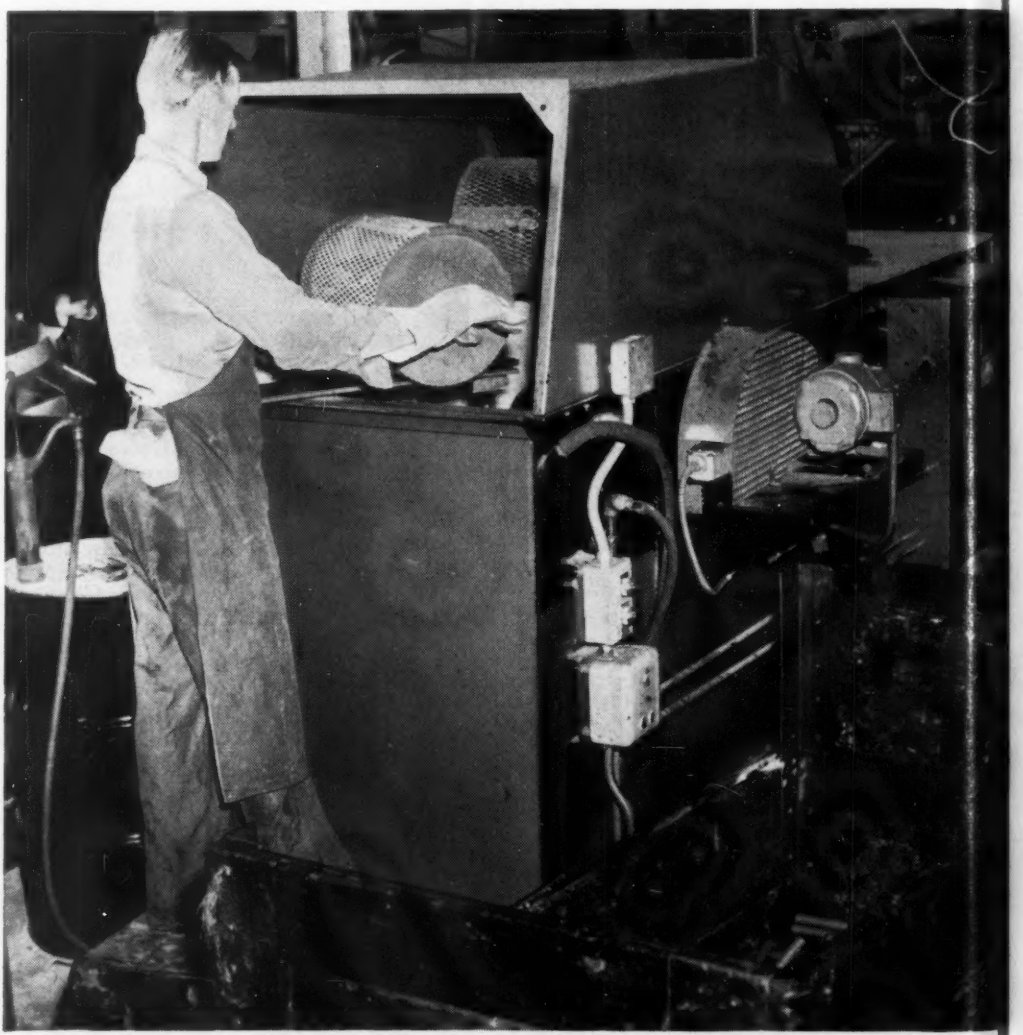
Vapor degreasing-



PHOTOGRAPH: Courtesy of PHILLIPS MANUFACTURING COMPANY

The new Phillips Rotomatic with liquid dip permits strict control of cleaning cycles. In addition the back end of the tank, above the boiling sump, can be used as a straight batch-type degreaser.

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Vapor degreasing with Diamond Perchlorethylene digs out soils other methods can't touch. Handles all part sizes and weights. Requires less space, effort and maintenance. It's safe, fast, flexible . . . and work comes out stain-free, etch-free, warm and dry—ready for your next operation.

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1. Hot vapor only.
2. Hot vapor, cool spray, hot vapor.
3. Warm solvent dip, hot vapor.
4. Boiling solvent dip, warm solvent dip, hot vapor.
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6. Ultrasonic agitation of the solvent in combination with other methods.

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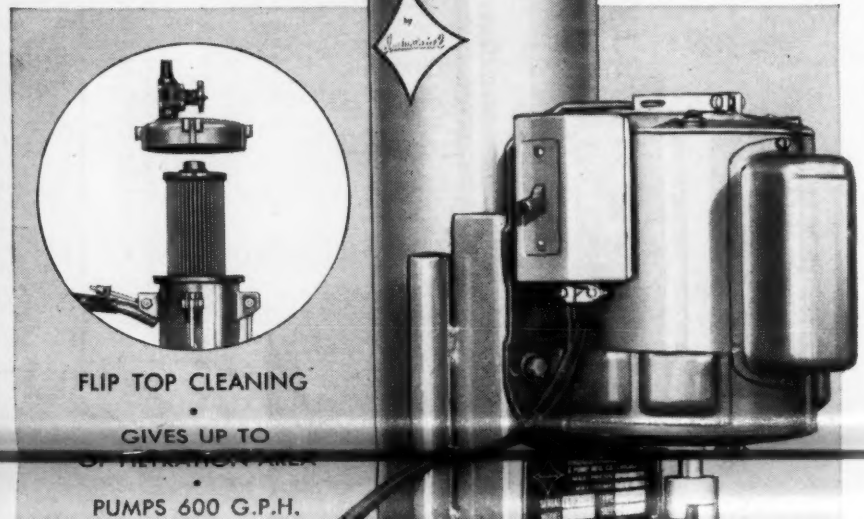

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Stands less than 45 inches, takes less than 3 sq. ft. of floor but offers 600 GPH of flow capacity—up to 20 sq. ft. of filtration area.

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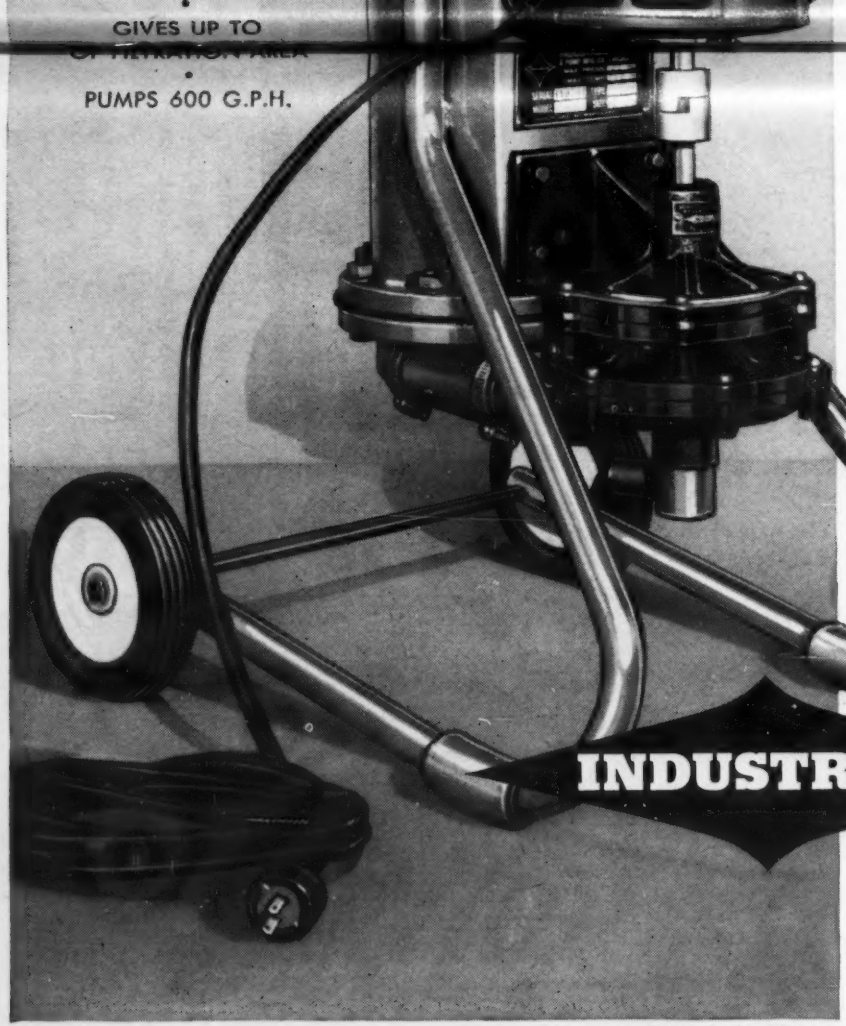
Rolls on 6" dia. rubber-tired wheels. Weighs but 140 lbs. *full*. Counter balanced design **gives 4 point suspension, rigid work stability.**

Cover lifts off. Pull-out cartridge can be rinsed and replaced in minutes.



but 140 lbs. *full*. Counter balanced design **gives 4 point suspension, rigid work stability.**

Cover lifts off. Pull-out cartridge can be rinsed and replaced in minutes.

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How Wet Blasting Helps a Hard Chrome Plater

From rust to reflectance, wet blasting can be an important tool for the plater . . .

By **SAVIN ZAVARELLA**
President
Pressure Blast Manufacturing Co.

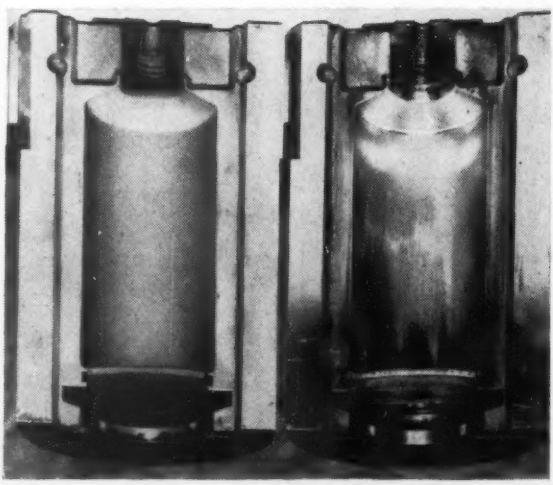

Fig. 1—Mold for frosted translucent plastic squeeze bottles is wet blasted prior to plating. Mold on left shows the even matte surface produced. Plate duplicates this wet blasted finish, which is then duplicated in plastic when the mold is used to produce a bottle.

Some of the many uses for wet blasting in a plating shop are exemplified by the applications in which this process is helpful at Nutmeg Chrome Corporation, West Hartford, Conn., specialist in precision hard chromium plating.

Nutmeg Chrome has built up quite a reputation as a hard chromium plating shop. Wet blasting, according to the firm's president, Arthur W. Logozzo (a past president and honorary member of the American Electroplaters' Society) is one of the tools the company uses to aid in its close-tolerance plating of odd shapes and intricate dies.

Typical jobs for wet blasting at Nutmeg Chrome include removing scale; preparing specialized molds and dies; improving adhesion by roughening the surface to improve

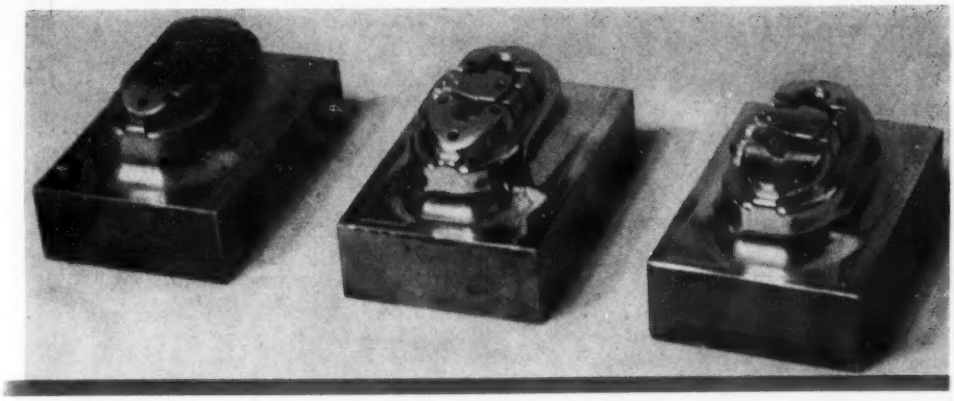

Fig. 2—Preparing switch component dies for chromium plate requires three steps: left, die as it came from hardening bath; center, after wet blasting with fine-mesh abrasives; right, after the switch component has been polished and is ready to be chromium plated.

the mechanical bond; producing non-glare finishes and meeting critical reflectometer specifications.

Specific applications of wet blasting demonstrate some of the uses which Nutmeg Chrome has for this process.

Most micrometers and dial indicators require wet blasting prior to subsequent operations.

Molds for volleyballs, softballs and basketballs are wet blasted to achieve a nonslip face on the finished product.

In producing molds for making plastic school furniture the desired sheen and matte background are achieved by wet blasting and then lightly polishing the mold.

In certain jobs where a precise reflectometer reading must be produced on a surface, Nutmeg Chrome wet blasts with a series of different grit sizes until the specified surface is produced.

Equipment

The Connecticut plater's equipment for wet blasting is a Pressure

Fig. 3—Pressure Blast, Jr. wet blasting machine is used by Nutmeg Chrome. This machine is designed for shops where frequent changes of abrasive are required. (Photographs courtesy Pressure Blast Manufacturing Company, Inc., Manchester, Connecticut.)

Blast, Jr., blast cabinet. This machine has a single compressed-air-operated blast gun which ejects water and abrasives in a wide spray pattern at approximately 680 feet per second. Abrasives that can be used include quartz, aluminum oxide, silicon carbide.

Blasting takes place in a totally enclosed cabinet with arm ports for holding the workpiece and the gun. The abrasive slurry is collected by the machine after use and recirculated back to the gun.

★ ★ ★

Paint for Hot Spots

A problem that aircraft and missile builders often have to face is that of painting areas which must withstand extreme heat. One of the most successful answers to this problem has been the silicone finish.

The nose cone of the Chrysler Redstone Missile is a typical example of such a problem. The first paints tested on this nose cone ignited and burned under conditions of simulated re-entry into the earth's atmosphere. Engineers found the answer in Sicon, a product of Midland Industrial Finishes Co., Waukegan, Ill. This silicone heat resistant finish remains intact at temperatures up to 1000 deg. F.

Engine shrouds on the TM-61 Martin Matadors present a similar problem. Specifications now call for use of Sicon when servicing and refinishing become necessary.

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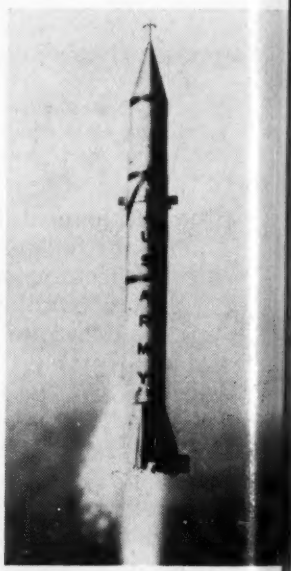
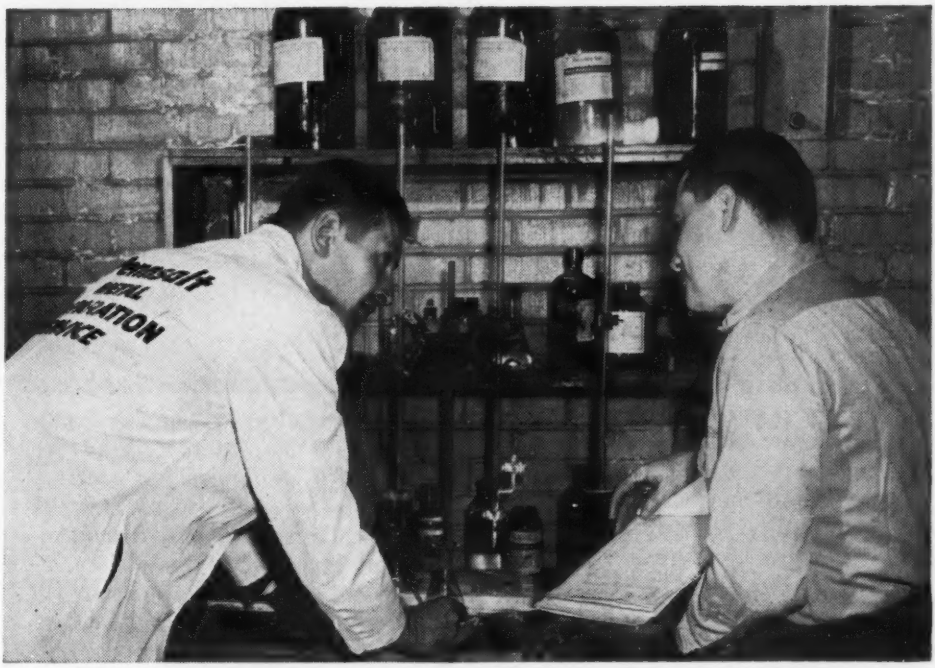


Chrysler Redstone Missile: silicone solved the nose-cone problem

★ ★ ★

USAF TM-61 Martin Matador: hot engine shroud requires special finish



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The Japanese Plating Industry Today

Statistics and comments on current Japanese production, consumption and technical progress . . .

The Japanese electroplating industry has grown rapidly since 1946. It now consists of 3,500 job plating shops and 300 to 350 captive plating departments.

Although technical progress has been substantial, there is still a great need for improved facilities and equipment, improved management and production control methods. This is particularly true since the majority of plating is still done in small job shops. A survey of the industry shows that 78 per cent of the job shops have less than 30 employees and only four per cent have over 100 employees.

Production Volume

A review of production volumes provides further indications as to the status of electroplating in Japan.

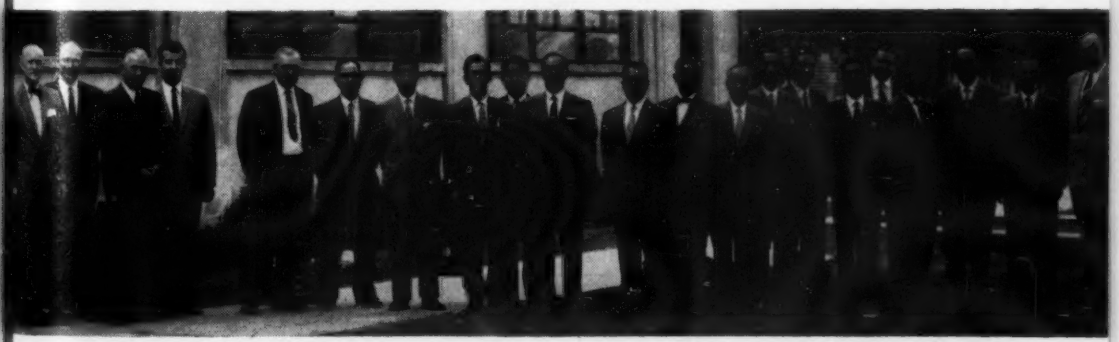
VALUE OF AVERAGE YEARLY PRODUCTION	PER CENT OF TOTAL JOB SHOPS
Less than $2,500.00	11 per cent
$2,500.00 to $12,500.00	40 per cent
$12,500.00 to $25,000.00	21 per cent
$25,000.00 to $75,000.00	19 per cent
Over $75,000.00	8 per cent

Recently a group of 12 Japanese electroplaters—all presidents of Japanese job plating shops — visited the United States to tour plating installations here and observe techniques. The information in this article is based upon a report that these men brought with them to describe their own plating industry.

The average annual output per employee is $1,200 to $1,800 in shops doing principally copper-nickel-chromium plating.

Like the United States job shops, the Japanese job shops located in areas where a great volume of plating of one type is required are more specialized. Other shops must maintain facilities to deposit any of the usual metals. Specialists, for example, may concentrate on decorative chromium, industrial or hard chromium, silver, gold, barrel plating of small parts for corrosion protection, or other processes. Shops organized to serve many different industries must maintain facilities for doing all or at least several of these kinds of plating.

In Cincinnati, the Japanese Small Business Electroplating Specialists Study Team conferred with Ezra A. Blount, editor of PRODUCTS FINISHING, Robert D. Miller, Electric Auto-Lite Co., Carl Lottman, Victory Plating, Inc., and Charles Wise, Buckeye Products Co. Shown (1st row, left to right) are S. Ueda, Asahi Plating Industry Co., Ltd.; Y. Ito, Ito Electroplating Industrial Co., Ltd.; J. Nakanishi, Kansai Electroplating Co., Ltd.; M. Araki, Koka Chrome Industry Co., Ltd. (Team Secretary); T. Tohei, Tohei Plating Co., Ltd. (Team Leader); Prof. M. Nakamura, Kanto Gakuin University; T. Shida, Hiroo Electroplating Co., Ltd. Standing (2nd row, left to right) are Ezra A. Blount, Gerard H. Poll, Jr., PRODUCTS FINISHING; R. Fukuda, interpreter; Robert D. Miller; M. Maejima, Chiryu Giken Industrial Co., Ltd.; M. Ogata, Ogata Plating Industry Co., Ltd.; S. Nishiura, Toyo Plating Industry Co., Ltd.; M. Fukui, Fukui Denka Kogyo Co, Ltd.; T. Otsuka, interpreter; J. Ishikawa, Ishikawa Metal Industry Co, Ltd.; Carl Lottman. The visitors were conducted on tours of the Auto Sun Products Co., Electric Auto-Lite Co., and Victory Plating, Inc., in Cincinnati. In all, 20 plants in eight cities were visited. (Photo by PRODUCTS FINISHING)



Japanese visitors shown with officials of the Udylite Corporation, Detroit. The group was greeted by L. K. Lindahl, chairman of the board of directors; L. V. Nagle, executive vice president; Gust Kentta, head of process engineering; Sam Chmielewski, personnel director; R. C. Trees, director of public relations; Arthur Sieloff, assistant to Mr. Trees. Mr. Kentta then discussed electroplating processes and cycles involved in American practice. Chet Clark, head of Udylite's Engineering Dept., showed the procedures involved in planning and engineering equipment for electroplating. The group was taken on a tour of the Udylite manufacturing plant on Hoover Road, and of the Udylite Research Corp. Dr. Henry Brown, director of Udylite research, discussed various types of decorative plates and their corrosion resistance. (Photograph courtesy The Udylite Corporation, Detroit 11, Michigan.)

". . . antimony parts are copper plated by use of . . . the Daniell Cell."

Shops that specialize in one or two kinds of plating report cost breakdowns as follows:

	DECORATIVE CHROMIUM	INDUSTRIAL CHROMIUM	SILVER & GOLD	BARREL PLATING
Material Cost	30%	15%	50%	40%
Labor Cost	30%	30%	15%	20%
Overhead	40%	55%	35%	40%

Usually shops serve from 15 to 40 customers, with a maximum of 100.

A survey made in 1958 gives some indication of the consumption and cost of some of the supplies required by electroplaters.

MATERIALS	ANNUAL CONSUMPTION	PRICE PER POUND
Emery abrasives	3,100 tons	$0.10
Nickel anodes	680 tons	2.20
Copper anodes	1,800 tons	0.50
Nickel sulfate	885 tons	0.50
Copper cyanide	300 tons	0.75
Chromic acid	200 tons	0.35
Sodium cyanide	3,750 tons	0.24

Finishing Processes, Equipment

Polishing and buffing is performed manually on conventional equipment. Barrel finishing and abrasive belt polishing are still being studied and have been adopted by only a few shops.

Generally, cleaning methods are imperfect due in part to restrictions on space. Electrocleaning is in use, but emulsion cleaning is not used. Vapor degreasing is used to some extent. Manual brushing helps to compensate for inadequate chemical cleaning. Platers recognize that this is one of the most important areas for improvement.

The process employed for decorative chromium plating on both steel and zinc die castings includes copper, nickel and finally chromium plating. Thickness specifications are 0.0004 to 0.0006 inch of copper and 0.0004 inch of nickel maximum, except for automotive parts. The copper is deposited from a high-efficiency cyanide bath. The copper deposit is buffed, after which a bright nickel plate is deposited.

Although a method of depositing

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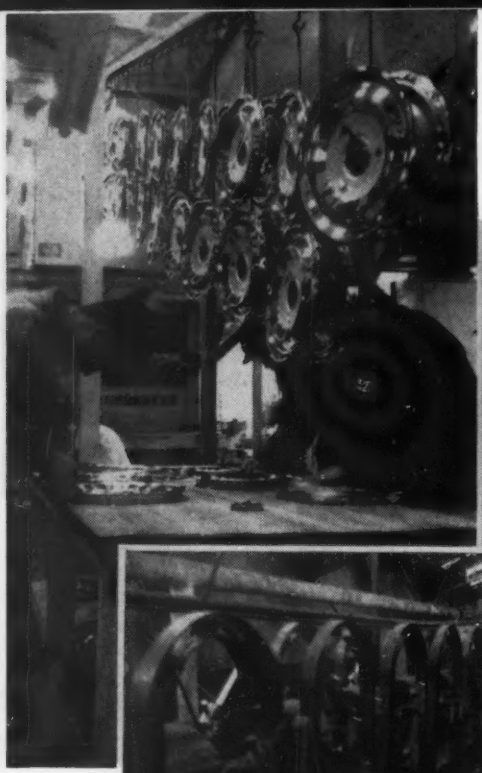
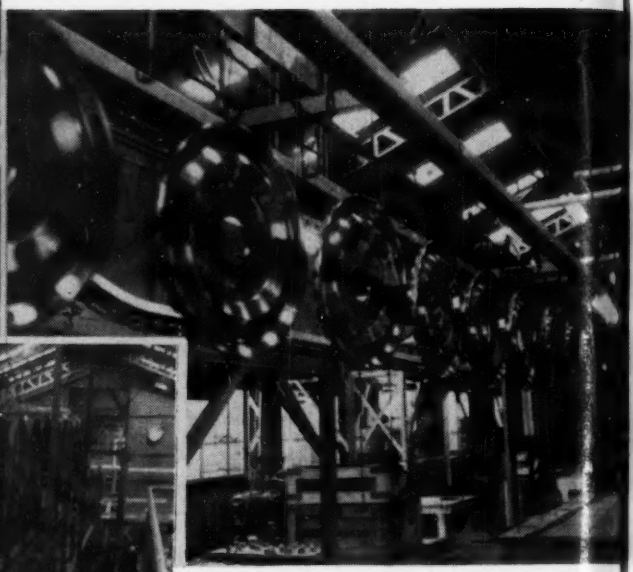
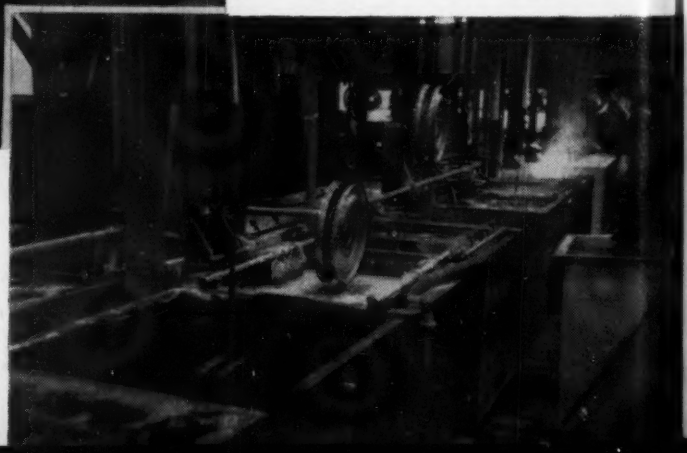
Japanese Plating . . .







Views of plating operations in plant of Nihon Token Shizai Co., Ltd. Racking parts (above left); arm-type transfer mechanism (left); line of processing and plating tanks (below); parts on transport conveyor (above right). (Photographs courtesy Nihon Token Shizai Co., Ltd., Tokyo, Japan.)

CANNON ELECTRIC improves contact performance with SEL-REX Bright Gold Alloy S-42

Cannon plug-contacts, plated with 60-millionths of Sel-Rex Bright Gold Alloy S-42, were unaffected by exposure to an atmosphere of moist hydrogen sulfide. The greater density of the deposit fully protected the base metal from attack.
SEL-REX BRIGHT GOLD ALLOY S-42
These contacts plated with 60-millionths of conventional 24K Gold, tarnished and roughened after only one hour's exposure to the moist hydrogen sulfide atmosphere. The granular, micro-porous deposit of conventional gold gave little protection to the base metal.
STANDARD 24K GOLD PLATE

Contacts used in world-famous Cannon Plugs must be capable of withstanding corrosion and tarnish, in addition to the punishing effects of repeated engagement and disengagement. The photographs, taken by Cannon in their own laboratory, show why conventional 24K gold plate failed to meet the requirements of this application.

Both samples were plated with 60-millionths of gold over silver plate, and were photographed after an hour's exposure to an atmosphere of moist hydrogen sulfide. The contacts plated with 24K gold tarnished and roughened – those plated with Sel-Rex Bright Gold Alloy S-42 retained their original mirror-bright finish.

Says Cannon Electric Company, Los Angeles: "Our brass contacts plated with Sel-Rex Bright Gold Alloy S-42 offer exceptional protection against both corrosion and friction-wear. Some of the advantages we have demonstrated in our own laboratory, and what they mean to us, follow:

"**1. Greater Hardness**:- Knoop 140-160 for Sel-Rex Bright Gold Alloy S-42, compared to only 40-50 for conventional 24K gold plate.

"**2. Greater Wearability**:- The S-42 deposit is smooth and bright. This, in combination with hardness, means that less force is required to separate the mating halves of the connector . . . less wear, less tendency for galling."

"**3. Improved Reliability**:- Ordinary 24K gold plate is quite granular and exhibits considerable micro-porosity. Tarnish, corrosion of the base metal and early failure in-service of the plated contact is the end result. The Bright Gold Alloy S-42, being a smoother, far more dense deposit, has demonstrated much greater protection against tarnish and corrosion in all the tests we have performed at Cannon.

"At Cannon Electric, Sel-Rex Bright Gold Alloy S-42 has been instrumental in solving wear and tarnish problems encountered in connectors used in aircraft, and intricate missile and electronic components."

The foregoing is just another of our many case histories which prove that: "From Missiles and Rockets to Misses and Lockets – there's a Sel-Rex Precious Metal Plating Process to help you make your product better, more salable."

For other case histories, technical information and application data, ask for ML-1.

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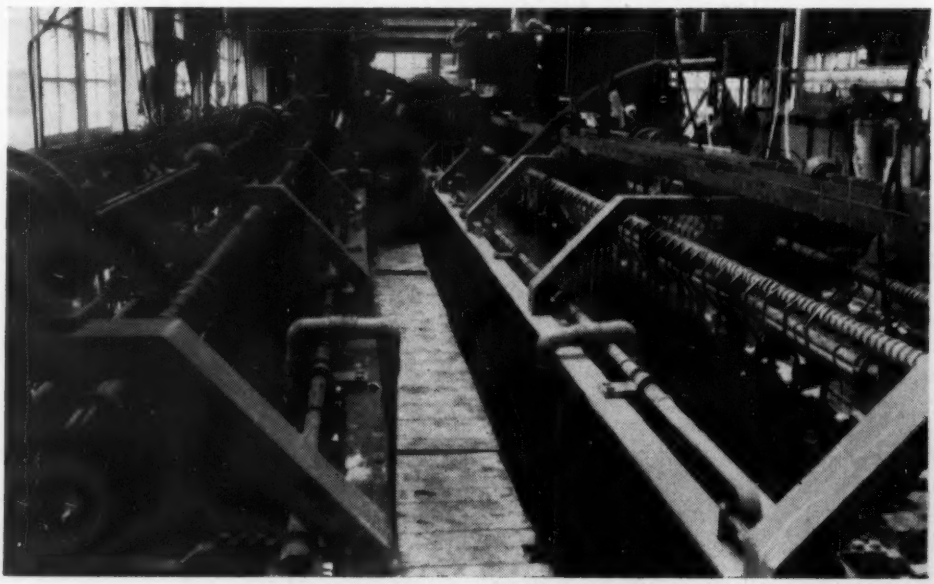
Plating operations at Fukui Denka Kogyo Co., Ltd., include bright copper, bright nickel, chromium, barrel cadmium and zinc. Racking/unracking area shown above. (Photos courtesy Fukui Denka Kogyo Co., Ltd., Tokyo, Japan.)

Closeup of cathode rod in bright copper semi-automatic showing "threads" in cathode rod which carries racks through the tanks. Air agitation is also employed in bright copper tank. Temperature, 115 deg. F., pH 12.5.

chromium from a trivalent solution has been invented by Dr. Yoshida, most of the shops use the chromic-sulfuric acid solution. Generally the same type of bath is used for hard chromium plating, with different concentrations, temperatures and current densities.



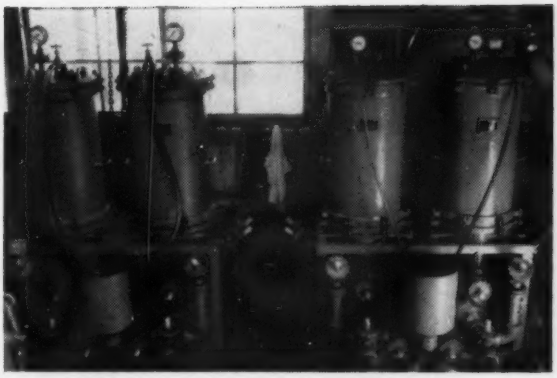
Semi-automatic bright copper (right) and bright nickel (left) machines. Cathode rods rock up and down 40 times per minute. Rotation of cathode rods moves racks through the tanks from one end to the other. Solutions are filtered continuously.

Zinc and cadmium plating for corrosion protection are in wide use. Generally, plating is done in cyanide solutions followed by suitable chromate conversion treatments as final finishes.

Gold and silver plating has, in the past, been applied on luxury items only as a thin "flash" plate. At the present time there is a strong indication of an increase in the industrial use for these deposits in the near future.

For plating on antimony castings, which constitute a large part of the products exported, a method peculiar to Japan is employed. The antimony parts are copper plated by use of internal current based on the principle of the Daniell Cell. Like immersion plating, this process has the ability to plate in recesses as well as on other areas.

Power for plating is furnished by selenium rectifiers or Vertoro mechanical rectifiers.

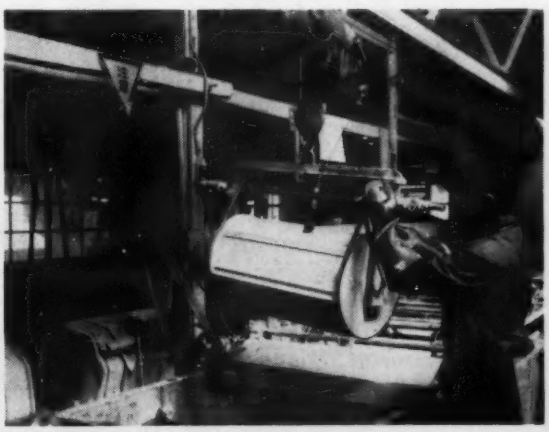


Filter installation for continuous filtration of bright copper and nickel plating solutions.

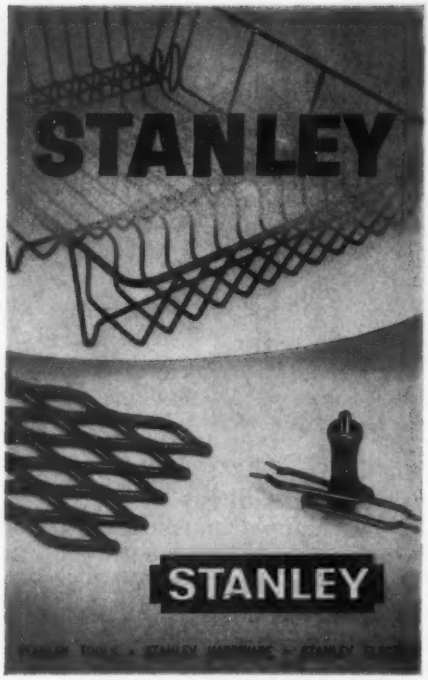
Production Facililties

Most of the plating shops have no automatic or semi-automatic equipment. The accompanying illustrations, however, show two conveyorized plating setups in the plants of Nihon Token Shizai Co., Ltd., and Fukui Denka Kogyo Co., Ltd. One installation has overhead arm transfers to move racks from tank to tank.

Chromium plating tank can be seen in the right foreground; semi-automatic bright copper and nickel plating machines (background). Racking area is in left background.



Barrel plating area. Electric hoist and monorail facilitate handling. Barrel finishing section (left background) is for tumbling and burnishing of parts to be plated.



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The other installation employs semi-automatic copper and nickel plating tanks with screw-type cathode rods for moving racks through the tanks.

Organizations

Throughout the country there are eight electroplating "cooperatives," of which those in Tokyo, Osaka and Nagoya are the largest. These are organized under the leadership of the Federation of National Electroplating Associations. These cooperatives are for the mutual friendship of the members and for group action between members and other groups such as suppliers of plating materials. Other functions include efforts for improvements in electroplating technique and more technical training for workers. About half of the plating shops in Japan are members of one of the country's cooperatives.

Technical societies such as the Metal Finishing Society of Japan, the Electrochemical Society, and the Japanese Electroplating Society spread information about modern electroplating techniques through study reports, group meetings, lecture meetings, and the publication of bulletins and monthly magazines.

Laboratories for technical consulting, analysis and testing of plating solutions are mainly government or public organizations. There are less than 10 private consultants. Most of the research in electroplating is being done in the universities. At present about 30 persons are engaged in electroplating research in Japan.

Plating Industry Problems

Even in Japan, where wages are low, it is necessary to reduce costs and increase productivity. Facilities and management systems fitted to small, diversified production must be devised and adopted.

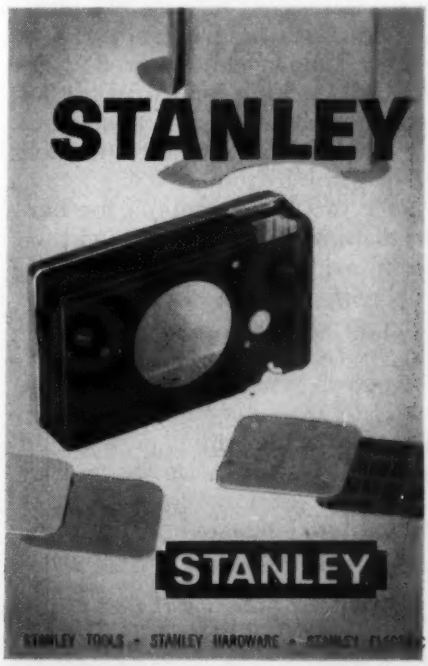
The differences between larger and smaller plating firms are becoming greater. Standards of quality and standard pricing systems are needed so that all platers may compete for the business on the same basis.

Waste disposal is soon to become a major problem. It is necessary to find the most economical way for the plating industry to dispose of objectionable wastes.

Guide to Water, Alkaline Solution and Plating-Bath Heating. Bulletin GEA-6305A — two pages telling how to select General Electric immersion heaters.

This bulletin tells (first) how to determine which type of heater to use, (second) how to select thermostats and controls for controlling liquid temperatures. Third section shows a typical wiring diagram for thermostat and for magnetic switch controls.

A simple five-step formula is outlined in the first section for easy selection of proper heater. Table lists amount of kilowatts necessary to heat liquid to desired temperature in one hour. Available from General Electric Company, Schenectady 5, N. Y.



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OR LAMINATING ADHESIVES

for vinyl-to-metal applications

For roller coating metal, Stanley Chemical Plastisol systems give lasting bond, attractive appearance. Textured surfaces look better *longer* because Stanley Plastisols provide maximum resistance to abrasion.
For laminating vinyl film to metal, Stanley Laminating Adhesives insure maximum bonding strength even during severe deep drawing or crimping operations.
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For more data circle 331 on Postpaid Card

How to Tumble-Finish Tungsten Carbide Parts

Following these recommendations can save tedious hand labor in finishing hard, brittle parts . . .

By **CHARLES G. TUVEK**
Barrel Finishing Specialist
Pratt & Whitney Company, Inc.
West Hartford, Conn.

Polishing and forming a radius on tungsten carbide parts calls for good judgment and an understanding of the nature of hard metals and their alloys. Nitrided high-speed-steel parts are similar to the carbides in that they are very brittle.

Chipping, nicking or cracking of such parts results during tumbling unless considerable skill is exercised; thus most parts made of the above materials are hand stoned. This practice is time consuming and costly and never produces uniform results.

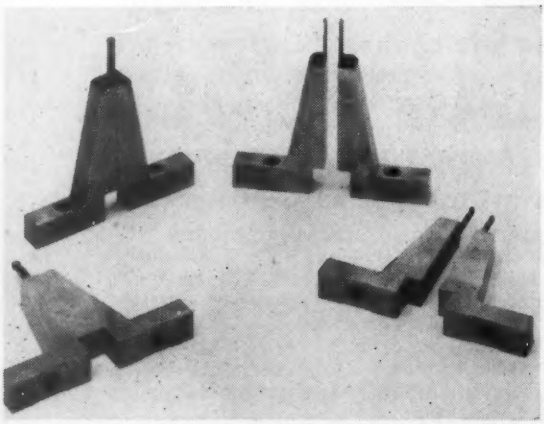

Fig. 1 — Carbide-tipped high-speed-steel parts approximately 1/4 by 2 by 1 1/2 inches can be tumbled in a one-cubic-foot barrel. From 75 to 100 pieces per load can be processed without injury to the parts. The result: 0.003 to 0.005-inch radius after six to seven hours tumbling at slow speed. (Photo courtesy Pratt & Whitney Co., Inc.)

Supporting these hard parts by racking or rodding in the barrel to prevent damage is usually not practical because of the harsh action and the long time cycle involved. Furthermore, racking or rodding of tungsten carbide parts is a waste of time unless sharp edges are belt sanded prior to tumbling.*

Exact processing details for barrel finishing carbide parts will be determined by the size of the parts, number of parts and size and type of the barrel used.

Large carbide parts or carbide-tipped-steel parts weighing five pounds or over may be tumbled in aluminum oxide chips or shaped tumbling media. Smaller parts may be tumbled in large quantities of combination chips by carefully selecting the proper sizes to keep parts

*See *Reduce Your Tumbling Time*, PRODUCTS FINISHING, April, 1959, page 30.

For more data on advertisement on opposite page, circle 332 on Postpaid Card

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the *original* strip coating

No muss, no fuss. No waste of high-priced labor. "Liquid Envelope" booth coating costs less than hand scraping or grease-papering. Safer too! Dry film won't burn or support combustion.

New Users: Convince yourself. Order 5 gallon test-sample at drum-lot price.

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from clustering together or bumping one another. The barrel should be clean and a new load of chips should be used before starting this type of run. Volume of chips or media: 50 to 55 per cent of total barrel capacity. The barrel speed should not be more than eight or ten r.p.m.

The abrasive compound used should be similar to that used for hard steels, and the compound should be properly combined with the media to produce a good cushioning effect. No sand or grit should be added to the media when tumbling tungsten carbide or nitrided parts. And no acidic compound should be used, since such compounds are apt to attack the metal and cause pitting and etching of the surface. The usual abrasive compounds do little in forming radii on the edges of carbide. Most or all of the stock removal or breaking edges is done by the aluminum oxide media.

Two or more carbide or carbide-tipped parts may be finished in the same barrel, provided they are similar in size and weigh not over eight ounces each.

★ ★ ★

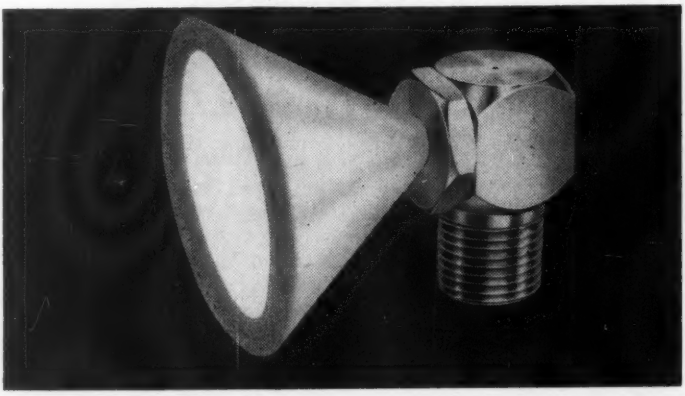
For more data on any product advertised in PRODUCTS FINISHING *use postpaid card opposite page 128*

METAL FINISHING NOZZLE PROBLEM

To select a nozzle which will efficiently spray phosphate coatings to metal surfaces.

SOLUTION

Delavan Type 2172 WR nozzle



This outstanding nozzle can operate effectively at pressures as low as 5 psi. Made of 316 stainless steel, the 2172 WR offers high resistance to corrosion, assuring longer, more dependable service. There are no vanes, cores or other obstructions to promote clogging.

Whatever metal finishing nozzles you require, there's a Delavan nozzle that does the job best. Write today for Catalog 33A.

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Choose from six sizes of

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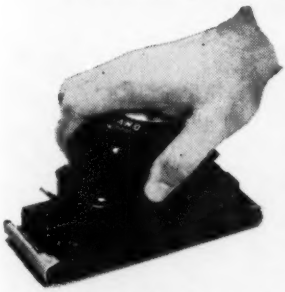
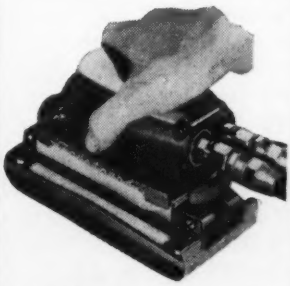
...then watch output climb!

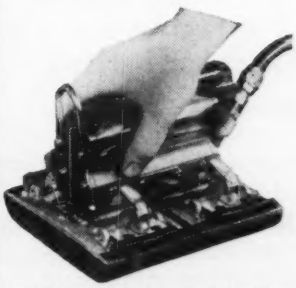
Six sizes of Sundstrand Air Sanders—weighing from 3 to 30 lb—all suitable for wet or dry sanding, give you unmatched freedom of choice. Let us show you advantages of each—without obligation, of course.



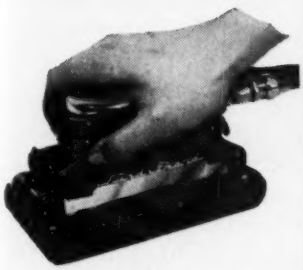
OS-800—lightest weight orbital air sander on the market, at only 3 lb, packs the power and speed needed for production jobs.



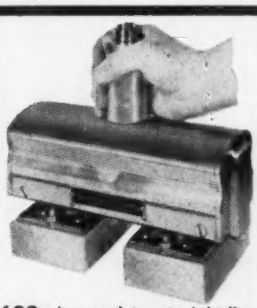
OS-700—single-pad orbital sander, weighing 5 lb, operates over 6000 cycles per minute.



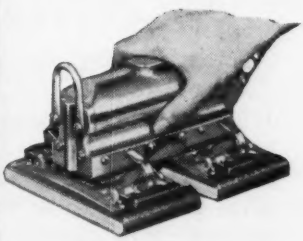
1000—straight-line sander with big abrasive area, operates at 2500 oscillations per minute, palm lever control, 7½ lb.



SP-101—straight-line, single-pad sander, 3000 oscillations per minute, 5 lb.



600—heavy-duty, straight-line unit for sanding, pumice rubbing, or polishing, 1100 oscillations per minute.



4000—straight-line, two-pad sander with longer, slower stroke; 2100 oscillations per minute, 9 lb.

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SUNDSTRAND MACHINE TOOL

Division of SUNDSTRAND CORPORATION, Belvidere, Illinois

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Electroplating on Titanium

Plating on titanium is complicated by the presence of an oxide film similar to that occurring on aluminum. H. Richaud has reviewed methods of plating various metals on titanium.[1]

Why electroplate on titanium? Richaud lists the following reasons:

a. Tin plating prevents seizing.

b. Copper plating facilitates pressing.

c. Brass, chromium and nickel plating decorates.

d. Brazing alloys are plated on titanium to facilitate joining parts. This is of special interest, since titanium must be heated in vacuum or in inert atmosphere to avoid damage.

After suitable surface treatment such as degreasing and pickling[2] a treatment similar to that used on aluminum is recommended.

Dr. Nelson F. Murphy
Research Professor of Chemical Engineering, Virginia Polytechnic Institute

Titanium is made cathodic in a bath of 200 ml. 40 per cent hydrofluoric acid; 100 grams zinc fluoride; and 800 ml. ethylene glycol. Parts are immersed for five to 10 minutes at 68-77 deg. F. A current density of 10 a.s.f. is used. The anodes are of graphite. This zinc coating is used as a base for other metals.

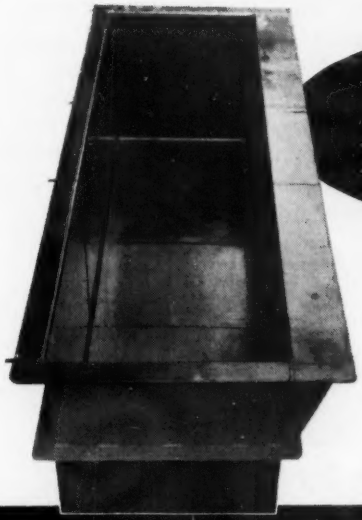
An anodic treatment of titanium in a zinc fluoride-hydrofluoric acid bath at 50 a.s.f. also forms an anodized film on which metals may be deposited.

Standard plating baths are used for plating metal on pre-treated titanium. Copper, brass, tin, cadmium, nickel and chromium have been plated on the metal. Stanley and Brenner recommend special pretreatment for titanium which is

[1]H. Richaud, *Metal Finishing Journal*, page 10, January, 1957.

[2]See PRODUCTS FINISHING, "New Way to Descale Titanium," October, 1958, pages 42-44.

A TANK LINING FOR EVERY SOLUTION



Amer-Plate®
PVC TANK LINING

Whether your plating and processing tanks are steel, concrete or wood, Amer-Plate can protect them indefinitely against corrosive solutions. Amer-Plate is a dense thermoplastic sheet made from high polymer vinyl chloride resins molded under high pressure and temperature.

- **It is unaffected by strong acids and oxidizing materials.**
- **It is non-toxic in food and beverage service.**
- **It is impervious to diesel oil, sour crude, aliphatic petroleum hydrocarbons.**
- **It will withstand hard chrome liquor to 160°F.**
- **It is resistant to highly corrosive salts.**
- **It resists alkalis including 50% caustic soda.**
- **It is insoluble in aliphatic alcohols, glycol and glycerine.**

Amer-Plate adheres not only to steel but also to concrete or wood without costly metal interlining. It is ideal as a membrane under acidproof brick construction. Amer-Plate is also supplied with a T-ribbed back for casting into place in new concrete tanks. Applicators are strategically located throughout the U.S. and Canada.

Amercoat® CORPORATION

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to be plated with chromium.[3]

Furnace brazing of titanium may be done with an alloy of 60 silver, 32 copper and 8 zinc. This alloy is electrodeposited on titanium as successive layers of silver and brass. After cleaning and pickling, the piece is plated with six microns of brass, eight microns of silver, six microns of brass and finally seven microns of silver. The joints, designed with 0.08 inch overlap, are heated under load, in controlled atmosphere, at 1472 deg. F. for 30 minutes. The joint is said to have a strength of about 2800 pounds per square inch.

[3]*Proceedings, American Electroplaters' Society* 43, 123-7, 1956.

Electropolishing

Colner, Feinlab and Reding reported a method of electropolishing titanium.[4] The bath is made up of six per cent by weight hydrofluoric acid, six per cent by weight water, 88 per cent by weight ethylene glycol. At room temperatures or slightly above, and a preferred current density of 750 to 1000 a.s.f. a finish of about 2.5 microinches was obtained. The authors point out that compositions and conditions may have to be varied for

[4]*Journal of the Electrochemical Society* 100, 485-9, 1953.

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NOW A NEW ADVANCE

to a controlled pH, high detergency, soak cleaner for applications where equipment and space limitations are restrictive for precleaning.

SOLVENTOL SYNDETS—a new family of premium products with positive penetration; free-rinsing characteristics, used at dilutions up to 1 part to 50 parts of water.

Introducing — SOLVENTOL Aluminum Etchant — a controlled product which will control your etching.

This is a highly alkaline bath which removes surface oxides and impurities, and leaves a uniform surface for your anodizing. Eliminates adherence of scale and sludge to tanks and coils.

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Time was when abrasive belt joints raised a rough problem in finishing circles. The early overlapping joints caused belts to rotate unevenly, chatter and mar freshly finished surfaces. Not so now! Today, Jewel Brand "Velvet Joints" have put the "smooth" back in smoothing operations. Jewel Brand Belt ends are neatly blended to form velvet smooth joints which permit an even flow of cutting surfaces and eliminate jumping. The result is a smooth, uninterrupted action that speeds up grinding, finishing and polishing . . . helps keep product finishing costs in line. A Jewel Brand Engineer will be glad to demonstrate these superior belts in action in your plant without obligation. Arrange for a free demonstration now. Write Abrasive Products, Inc., 509 Pearl Street, South Braintree 85, Massachusetts.

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rolls
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COATED ABRASIVES

ABRASIVE PRODUCTS, INC., South Braintree 85, Massachusetts

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use with certain alloys. This electropolished surface is not a suitable base for adherent plating.

Electropolishing titanium in a solution of chlorate ions has been reported from Germany.[5]

Tajima and Mori commented on the electrolyte recommended by Jacquet for electropolishing titanium.[6] Jacquet suggested an electrolyte containing acetic anhydride, perchloric acid, and water.[7]

Tajima and Mori investigated a phosphoric-hydrofluoric acid bath, a phosphoric-hydrofluoric acid-methanol bath, a phosphoric-hydrofluoric-acetic acid bath, a phosphoric-hydrofluoric acetic anhydride bath, and a chromic-hydrofluoric acid bath.[6]

[5]I. Epelloin, Z. *Elektrochem* 59, 689-92.
[6]S. Tajima and T. Mori, *PRODUCTS FINISHING*, pages 26-32, October, 1954.
[7]P. A. Jacquet and H. Jean., *Compt. Rend.*, 230, page 1862 (1950).

Brochure on Porcelain-Enameled Aluminum. Porcelain enamel on aluminum is described in a brochure by Argosy Industries, Inc., Middletown, Conn. Vitreous enamel fused to aluminum is said to greatly increase the rigidity of the metal. Where resistance to impact, chemicals, abrasion, heat, fading, streaking or staining is important, porcelain enameled aluminum has proved to be an excellent finish, the brochure states.

Copies of the brochure, entitled "Fused to Your Needs," may be secured from Argosy Industries, Inc., North Main and Grove Sts., Middletown, Conn.

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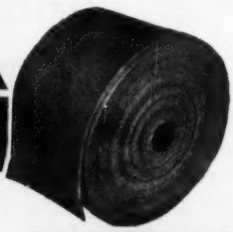
PACKED IN ROLLS OR IN BULK
JUST THE WAY YOU WANT IT!



Stays Soft and Tacky — A SPECK-FREE FINISH EVERY TIME — Now available in white or gold — in Four Different Types of Cloth.

There's a big difference in TACK-CLOTHS—that's why BOND processes four different meshes of cloth with several types of formulations to give you the cloth that best "fits" your special needs. You can get BOND TACK CLOTH packed just the way that suits you best, too—in 150 yard Rolls of 36" wide cloth or in handy Cartons.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up.

All BOND TACK CLOTH is Spontaneous Combustion Proof, Lint-Free and Wax-Free. Gives a sparkling speck-free finish every time. Clean and Sanitary. No waste. Choice of Standard, Extra Tacky or Less Tacky.

IN ROLLS
Cut off any size piece as needed.

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Size is 18" x 36"—folded to 4½" x 18" or 9" x 18" for ease of handling. Cut and folded—ready to use. Also Individually Packed in Glassine Envelopes —144 to the carton—

TRY THEM AND COMPARE RESULTS. Samples gladly sent upon request.
A WARRANTY OF SATISFACTION IN EVERY CARTON.

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"The Tacky Wiper Specialist"
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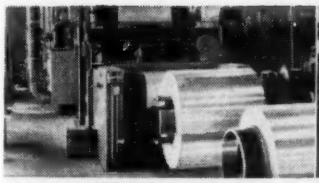
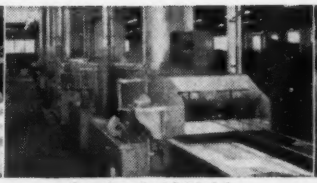
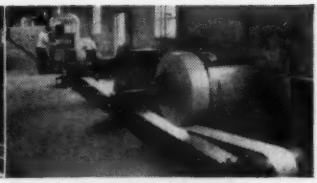


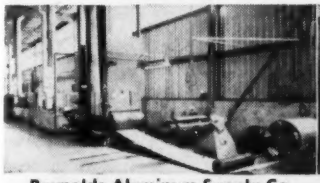
Litho-Strip Corp.
(Job Coating)



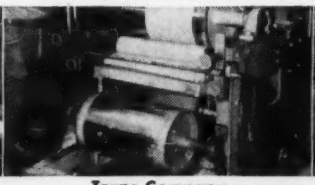
Stanley Judd Division
(Drapery Hardware)



Keystone Alloys Co.
(Siding)



Reynolds Aluminum Supply Co.
(Job Coating)



Trane Company
(Baseboard Heating)

Comaco, Inc.
(Job Coating)

Koolvent of Canada
(Awnings)

Crown Mfg. Co.
(Siding)

Stanley Steel Strapping Division
(Seal Fasteners)

FOR SUCCESSFUL STRIP COATING . . . it's *GASWAY*

OVER 70 LINES NOW IN SERVICE THROUGHOUT THE WORLD

This is the pattern of success. *Over 70 strip lines now in service.* These lines are producing properly finished strip efficiently and economically. Gasway is the pioneer in designing, building and installing complete metal strip finishing lines. For nearly 15 years, Gasway has been building and installing complete strip lines that are still producing satisfactorily and economically.

When you select a Gasway installation, you aren't dealing in futures... you're *sure* of the proper design and construction to fit your needs. You save trouble and get into production faster with Gasway. All the trial and error is eliminated. Gasway's long experience has solved the difficult problems involved in strip lines, up to 40" or wider. *This means positive protection of your strip coating investment.*

With Gasway strip lines, you can be sure of success!

- SMOOTH METERED COATING
- UNBELIEVABLE PAINT SAVINGS
- SPEEDS OVER 100 FEET PER MINUTE
- BOTH SIDES AND DIFFERENT COLORS, IF DESIRED
- APPLIES MANY DIFFERENT FINISHES

SEND FOR COMPLETE FACT FILE

GASWAY CORPORATION

6463 N. Ravenswood Ave.
Chicago 26, Illinois

LOOK TO GASWAY FOR EXPERIENCE AND KNOW-HOW IN STRIP COATING

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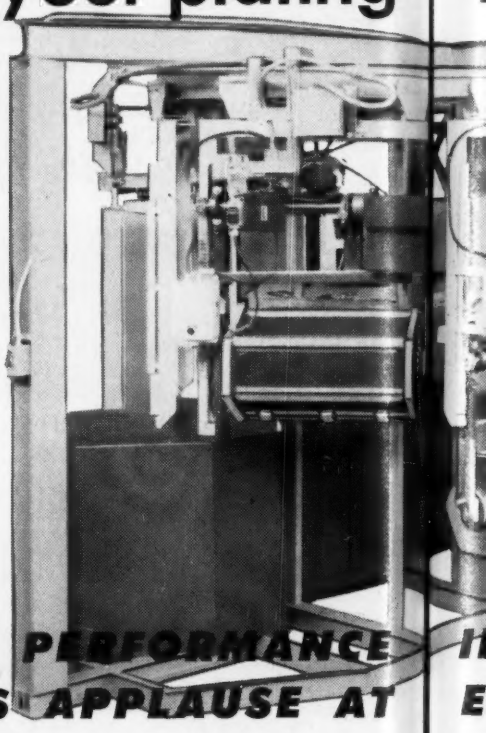
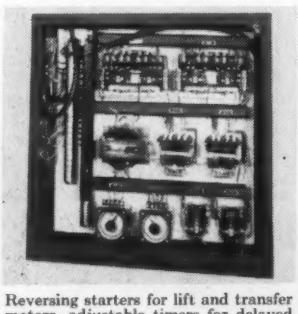
The V.I.P. is "Star" of A.E.S. Convention-Exposition

Seen by visitors on television and plant tours, the V.I.P. is here described by mistress-of-ceremonies on closed circuit telecast to the floor of the metal finishing show.

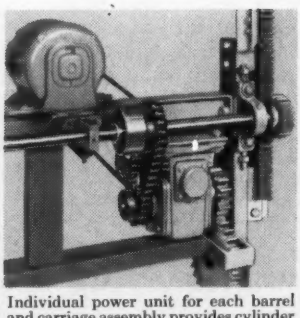
UDYLITE'S VIP* of your plating



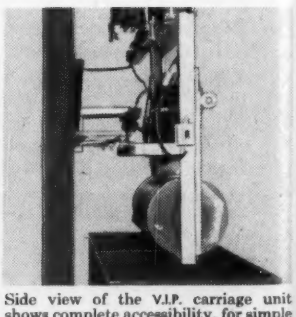
EXCITING PERFORMANCE BRINGS APPLAUSE AT



Reversing starters for lift and transfer motors, adjustable timers for delayed dips, down-dwells and drag-outs, and the relays for automatic machine operation are all centered in this single control panel.



Individual power unit for each barrel and carriage assembly provides cylinder rotation in the "down position". When reversed, an over-running clutch grips the shaft to raise the barrel for transfer to next station.



Side view of the V.I.P. carriage unit shows complete accessibility, for simple easy servicing, of all parts, anodes and solutions. The ample clearance around each unit also provides for excellent ventilation of the machine.

can be the STAR PRODUCTION

*V.I.P. Variable, Integrated Processing automation for a wide range of bulk finishing operations such as cleaning, plating, phosphating, etc.

IN BARREL AUTOMATION EXPOSITION FROM NOTED V.I.P.'S*

*(*very important platers)*

Executives, plating superintendents and engineers during the recent A.E.S. Convention were impressed and excited when they saw Udylite's new V.I.P. The extreme versatility of this new return type barrel machine was displayed in a way that amazed even automation experts. In action demonstrations, they envisioned new highs of cost cutting efficiency with this latest development of Udylite's equipment engineering team.

The result of years of careful study and intensive experiment is this hydraulically operated transfer system which puts a series of Udylite's famous long-life Tempron cylinders through an entire plating cycle . . . programmed by a single panel of adjustable controls. Guided by this "brain" the ingeniously simple "body" of the V.I.P. performs wonders of automatic processing.

When your production must be *both* fast and sure, here is what you can expect from the V.I.P.: High volume capacity coupled with the invaluable virtues of simple rugged construction, single, one man control and superb ease of maintenance. Above all, the amazing flexibility of this really versatile performer can establish the V.I.P. as the money making star of your finishing operations.

Learn today how the V.I.P. can, at once, raise your production and efficiency levels in a way you never before thought possible. Write, or see your Udylite representative for details, NOW!

the udylite corporation

detroit 11, michigan • world's largest plating supplier

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First from "3M"... SUPER SURFACES

"HONITE" AND "3M" ARE REGISTERED TRADEMARKS OF 3M CO., ST. PAUL 6, MINN. EXPORT: 99 PARK AVE., NEW YORK 16, N.Y. CANADA: LONDON, ONTARIO

MINNESOTA MINING AND MANUFACTURING COMPANY

...WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

-FINE PRE-PLATING ON ZINC DIE CASTINGS!

NEW Honite BRAND "Z-N" TUMBLING SHAPE

A major break-through in barrel finishing methods... 50-75% faster than any other tumbling medium for zinc.

Now from the research laboratories of the 3M Company comes a major break-through in zinc finishing methods . . . a new tumbling medium that gives you *barrel finishing* results never before possible on zinc die castings!

"HONITE" Brand "Z-N" Tumbling Shape hits a new high in producing extremely fine, pre-plating surfaces on *zinc* die castings . . . and does it 50-75% faster than any other tumbling medium for zinc . . . drastically cuts die-casting finishing costs.

Light-weight and fracture-resistant "HONITE" Brand "Z-N" Tumbling Shape employs an abrasive that is an exclusive fine-mesh development by 3M . . . results in impingement-free, low micro-inch surface finishes . . . reduces significantly the need for costly hand-buffing of zinc die castings.

GET THE COMPLETE STORY:

Find out how you can cut zinc finishing costs with this new barrel finishing development. Use this coupon.

Dept. HAC-89, 3M Company, 900 Bush Ave.,
St. Paul 6, Minn.

☐ Please have a "HONITE" Distributor contact me regarding the new "Z-N" Tumbling Shape.

☐ Send me complete information on the "Z-N" Tumbling Shape.

NAME_____

POSITION_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

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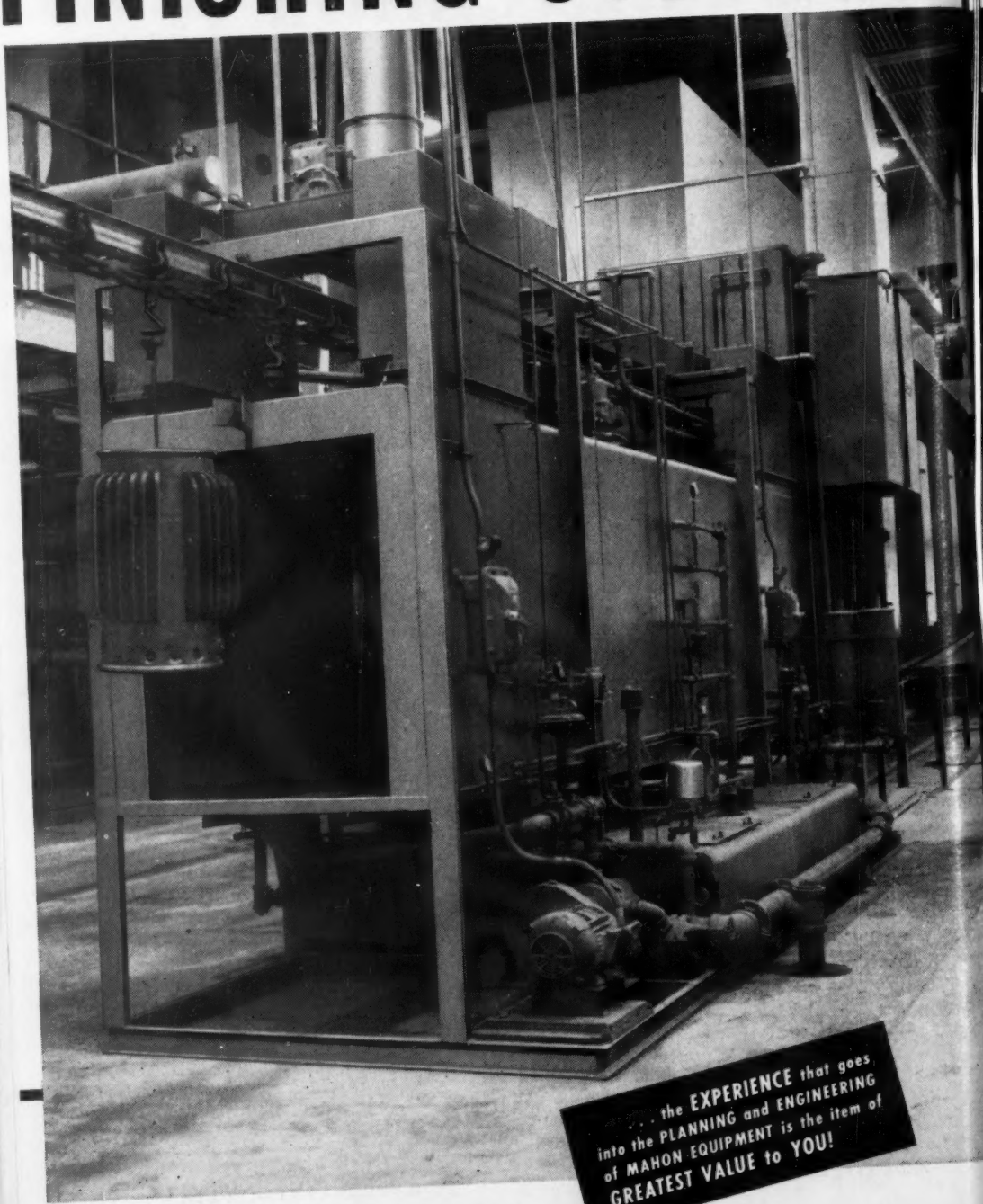
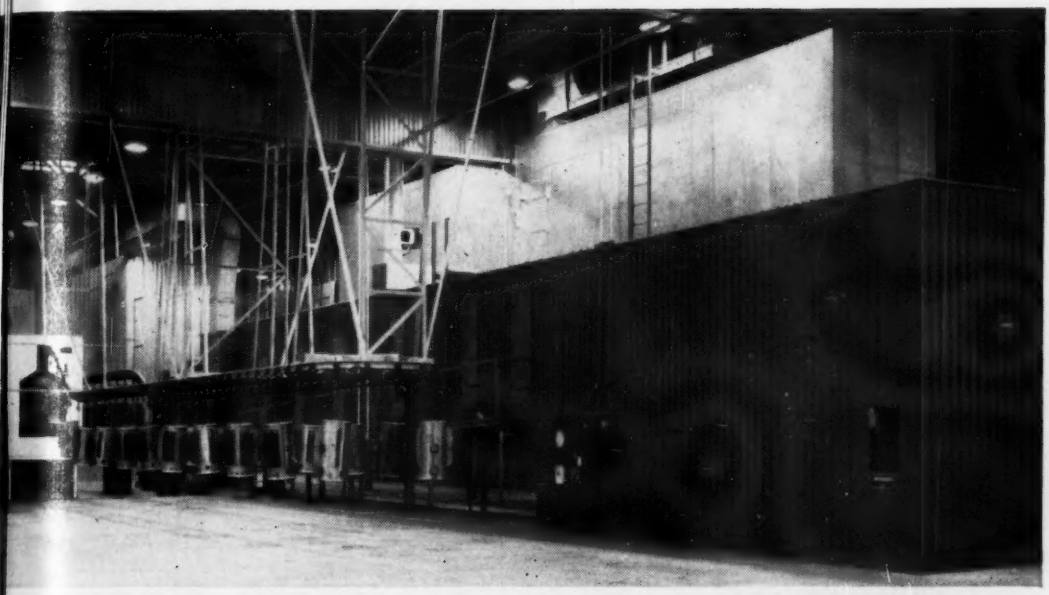
FINISHING SYSTEMS



For more data circle 342 on Postpaid Card



Mahon Combined Flow Coating and Spray Painting Machines Paint Transformer Tanks Automatically at Westinghouse!

In a complete automatic Finishing System, recently installed by Mahon in the Westinghouse plant at Athens, Ga., transformer tanks with recessed bottoms are painted automatically, inside and outside, in an inverted position as they pass through specially designed, combined Flow Coating and Automatic Spray Painting Machines—tanks are rotated as they pass through the two simultaneous coating processes. Four coats of paint are applied and each is oven-baked on one continuous line that passes through Four Automatic Painting Machines—one is shown at left.

Other Mahon equipment in this Westinghouse plant includes a Transformer Coil Dehydrating Oven and a second Complete Mahon Finishing System for applying the final coat on completely assembled transformers.

If you are considering a new finishing system, or any unit of finishing or processing equipment, you will want to discuss methods, equipment requirements, and possible production layouts with Mahon engineers . . . you'll find them better qualified to advise you, and better qualified to do the initial planning and engineering which plays such an important role in the ultimate operating efficiency of specially designed equipment of this type.

See Sweet's Plant Engineering File for Information, or Write for Catalogue A-659

THE R. C. MAHON COMPANY • Detroit 34, Michigan

SALES-ENGINEERING OFFICES in DETROIT, NEW YORK, CHICAGO and LOS ANGELES

MAHON

HARSHAW NICKEL SULFATE CARRIES GUARANTEED SPECIFICATIONS

Harshaw, the world's foremost producer of high purity nickel sulfate, guarantees specifications from which you derive the following benefits:

1. Consistently high quality material, laboratory tested for use in dull, semi-bright, and bright nickel plating solutions.
2. Product uniformity from shipment to shipment on which you can depend.
3. Harshaw nickel sulfate is high in purity and contaminants will always be well below tolerable limits in your plating bath.

Additional bonus features of Harshaw Nickel Sulfate are . . . Free-flowing, small definite crystals of uniform size . . . Rapid, complete solubility.

We shall be happy to quote prices and provide

NICKEL SULFATE
GUARANTEED SPECIFICATIONS

THE HARSHAW CHEMICAL CO.
1945 East 97th Street • Cleveland 6, Ohio

NICKEL SULFATE

GUARANTEED SPECIFICATIONS

Nickel (Electrolytic Method)	22.0% Min.
Iron	.01% Max.
Copper	.001% Max.
Zinc	.015% Max.
Manganese	.005% Max.
H_2O Insolubles	.01% Max.
Calcium + Magnesium As Calcium	.20% Max.

We shall be happy to quote prices and provide

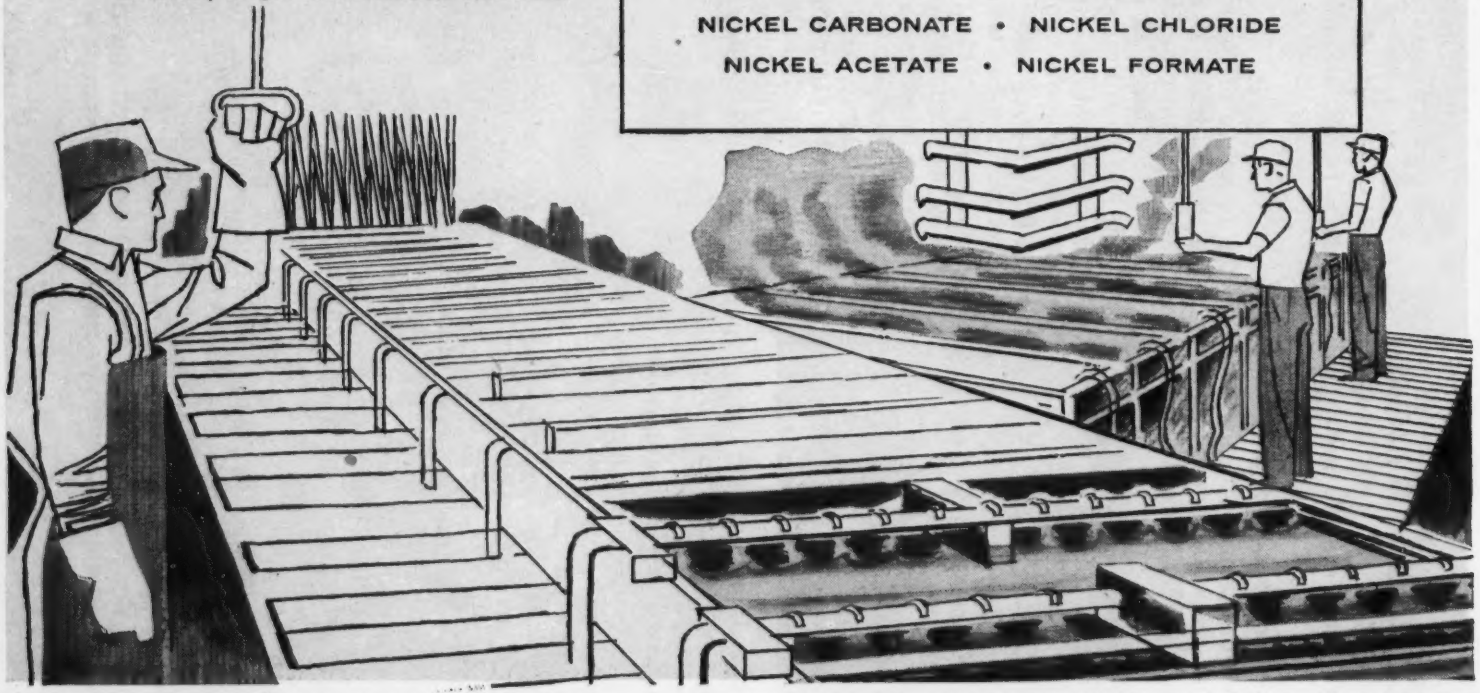
THE HARSHAW CHEMICAL CO.

1945 East 97th Street • Cleveland 6, Ohio

Chicago • Cincinnati • Cleveland • Detroit • Houston • Los Angeles
Hastings-On-Hudson • Philadelphia • Pittsburgh

Other Harshaw Nickel Chemicals
Featuring Guaranteed Specifications

NICKEL CARBONATE • NICKEL CHLORIDE
NICKEL ACETATE • NICKEL FORMATE



WRITE FOR FREE BOOKLET: HARSHAW'S COMPLETE SERVICE TO THE PLATING INDUSTRY

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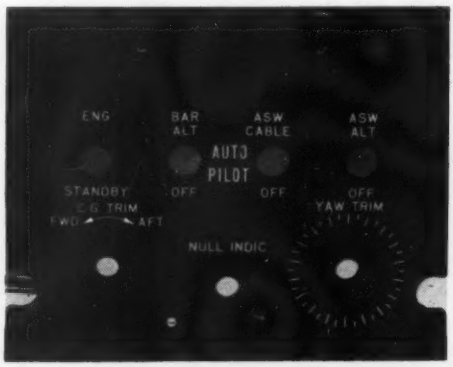
Metals Memos

News about metals and metal products . . .

Luminescent Lighting

Glowing panels of light based on the principle of electroluminescence are now made in production quantities by Miller Dial & Name Plate Company, El Monte, Calif. Principle of electroluminescence has been known for some time, but production had been limited to handmade parts until Miller developed a new process (patents applied for).



The glowing panels are basically special phosphor treated dielectrics energized by an alternating current. They are made by applying various layers of insulating, conductive and phosphor-bearing ceramic material to a 0.032-inch steel plate.

Current consumption is small, life is long (up to 12 years without appreciable dimming).

Typical applications: lighted control panels, advertising and information signs, clock faces and instrument panels.

Enhances Electrical Equipment

A new zirconium-copper alloy recently developed by American Metal Climax, Inc., combines excellent electrical conductivity and strength at high temperatures.

Biggest use for the new product is expected to be electrical equipment which requires components that have good conductivity and strength at high operating temperatures. Specialty uses where the new alloy might fit include fine wire, resistance welding wheels and tips, rectifier bases, rotor wedges, studs for x-ray tubes, electronic side rods.

American Metal Climax makes the product from high-conductivity, oxygen-free copper and high-purity zirconium, added in carefully controlled amounts. Name tag: Amzirc alloy.

Battery Buggy?

American Motors Corporation and Sonotone Corporation will explore possibilities of a battery-driven automobile.

At present, the chief drawback of an electric car is that you have to stop and recharge the battery in less than 100 miles of travel.

Aim of the AM-Sonotone project is to develop an electrical powerplant which would be continuously recharged during operation by a small, high-

performance engine. Battery would be sintered-plate nickel-cadmium type similar to those used in missiles and jets.

American Motors President George Romney says that the program may not produce a feasible powerplant, but that if successful, a more efficient automobile might result.

Stainless Steel Sandwich

Two stainless steel sheets with a thick sheet of copper sandwiched between are the basis of a new line of electrically heated pots and pans being made by Landers, Frary & Clark, New Britain, Conn., appliance maker.

The new development is the result of an extensive research project carried out by the appliance firm and Bridgeport Brass Company.

Advantage of the copper-stainless combination is that durability of stainless steel can be combined with excellent heat transfer properties of copper. With a heating element permanently attached to the sandwiched copper sheet, the heat travels quickly across the copper sheet almost as if it were sliding between the two sheets (heat transfer of stainless is relatively poor). When heat reaches edges of the pan it begins to rise evenly over the entire surface.

Tests indicate excellent heat-distribution qualities, according to Landers, Frary & Clark engineers.

Bret C. Neece (left), president, and Stanley G. Fisher, vice president for sales, Landers, Frary & Clark, unveil company's new stainless-steel-sheathed copper electric skillet.

Page 84

New Equipment, Materials, Processes

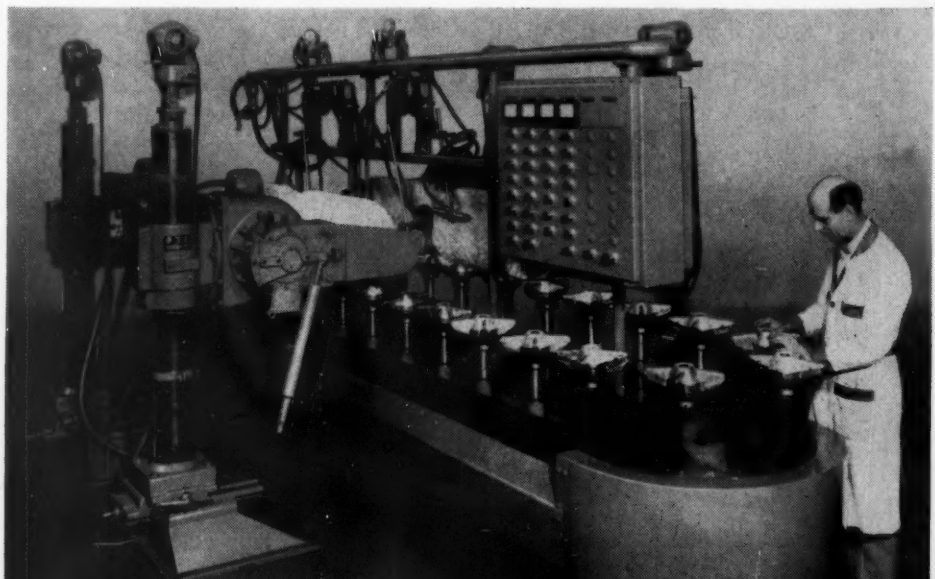
Polishing, Buffing, Degreasing, Cleaning, Barrel Finishing, Plating, Anodizing, Phosphatizing, Baking, Vacuum Metallizing, Chromate Coating, Paint Finishing, Waste Treatment

Automatic Polishing Machine

Acme Manufacturing Company has introduced a straight-line automatic polishing machine that takes little space yet offers excellent operational flexibility.

Basically the machine is a chain-driven conveyor that moves one-foot-long platens past the buffing stations at rates of 4 to 29 f.p.m. The platens are supported at top, bottom and sides by rollers.

Work spindles are attached with dovetail mountings to each platen.



Acme Straight-Line Automatic Polishing Machine. This unit is buffing hub-cap spinners.

Four Acme G-4 lathes perform buffing operations as conveyor carries parts around.

ONE new dry acid does NINE jobs better

ENTH-ACID 82

A free-flowing powdered blend of acid salts, activators and surfactants. Water soluble. Packed in non-returnable containers. Less expensive than 50% muriatic acid, superior activating and wetting ability. No special equipment needed. No special handling or safety problems. Non-fuming at room temperatures. Produces cleaner activated surfaces that allow shorter plating times.

1. Strips chromium rapidly without current
2. Prevents cloudy, stained nickel plate
3. Provides good adhesion on zinc die castings, copper and brass
4. Descales heat-treated, welded, or brazed steel without attack
5. Allows re-nickel plating on top of old passive nickel plate
6. Dissolves red rust
7. Activates steel prior to plating or phosphating
8. Prepares cast iron for plating
9. Removes soldering flux

Write today for complete technical data. Enthone, Inc., 442 Elm Street, New Haven, Conn.

ASARCO

ANOTHER PRODUCT OF Enthonics RESEARCH

ENTHONE

A Subsidiary of American Smelting and Refining Company

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Movement of the spindles at work stations can be provided by roller chains that drive sprockets on the work spindles or by cams that contact surfaces shaped to provide a controlled movement.

Platens may be driven continuously or indexed from station to station, as desired. Pushbutton control panel and compound applicator units are mounted on the conveyor unit. Compound applicators utilize factory air line pressure.

Manufacturer: Acme Manufacturing Co., 1400 E. Nine Mile Rd., Detroit 20, Mich.

For more data circle 1 on Reader Service Card

★ ★ ★

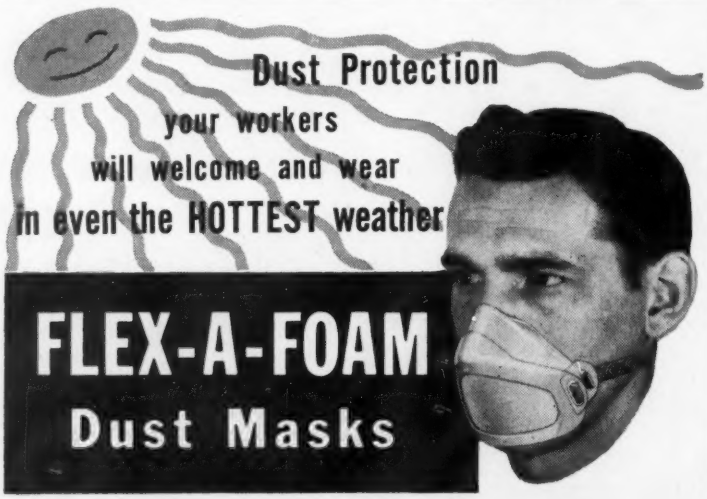
Zinc Plating Process

Zincalume zinc plating process produces brilliant deposits in both still and barrel equipment, according to Hanson-Van Winkle - Munning Co., developer of the process.

The addition agent used in this bath is effective in producing brilliant deposits without a bright dip. It permits the process to be used over a wide current density range, so that bright deposits can be produced at either high or low current densities with only slight changes in composition or operating conditions.

The bright Zincalume deposit can be bright dipped in nitric acid as well as chromate bright dips. Because of its brilliance and corrosion - protective qualities the process has applications in the

(Continued)



• **Ideal for Hot Weather.** Filter's porous action absorbs and actually exhales body heat.

• Flex-A-Foam's lightweight (only 1 ounce complete) makes it cool and comfortable to wear — not hot and cumbersome like old-fashioned respirators.

• Flex-A-Foam is easier to breathe and talk through than an ordinary pocket handkerchief — does away with that stuffy, smothered feeling.

UNMATCHED ECONOMY

Flex-A-Foam is the lowest priced quality respirator on the market today.

Flex-A-Foam's washable filter outlasts throw-away type by more than 100 to 1.

Fewer filter replacements with Flex-A-Foam Dust Masks mean fewer lost production hours.

Your best *Ounce of Protection* against Irritating Dust

Sample only $1.45 postpaid (Industrial price only)

FLEX-A-FOAM DUST MASK ®

FLEXO PRODUCTS, INC. • Westlake, Ohio

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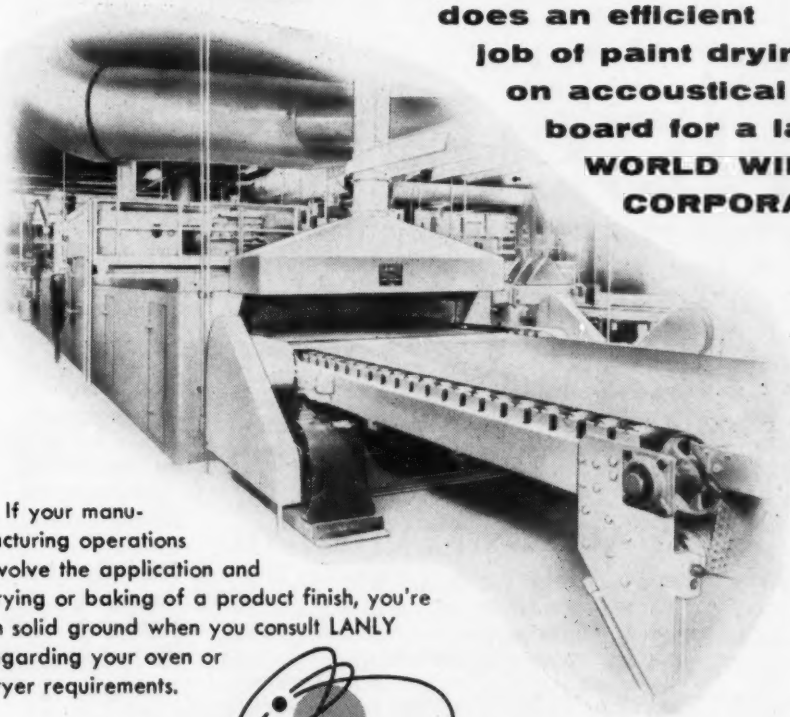
This lanly Conveyorized Lay-Down-Dryer

does an efficient job of paint drying on accoustical board for a large WORLD WIDE CORPORATION



If your manufacturing operations involve the application and drying or baking of a product finish, you're on solid ground when you consult LANLY regarding your oven or dryer requirements.

Find Your Representative In The Yellow Pages

THE lanly CO.

FINISHING OVENS

2800 Euclid Avenue • Cleveland 15, Ohio

LANLY welcomes a discussion of your drying and baking operation problems. Write for Catalog No. 560 and get better acquainted with our organization.

Atlanta, Georgia • Birmingham, Ala. • Boston, Mass. • Chicago, Ill. • Cleveland, Ohio
Columbia, So. Carolina • Columbus, Ohio • Detroit, Mich. • Houston, Texas
Pittsburgh, Pa. • Rochester, N. Y. • San Francisco, Calif. • St. Louis, Mo.

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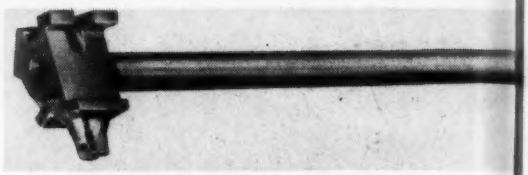
hardware trade and other fields.
Manufacturer: Hanson-Van Winkle-Munning Co., Matawan, N. J.
For more data circle 2 on Reader Service Card

★ ★ ★

Drum Plug Wrench

An improved drum plug wrench which will fit more than 95 per cent of all bungs on the market has been announced by Morse Manufacturing Co., Inc. The wrench is available in safety bronze as well as special steel alloy. Seven projections and five slots conform to the various bungs.



Morse Drum Plug Wrench Model No. 61

Light in weight, this wrench has a 16-inch steel tube handle to give adequate leverage to open ¾-inch or 2-inch bungs.

Model No. 61 wrench is used to remove bungs from non-volatile fluids and the Model No. 61M bronze non-sparking wrench is designed for hazardous areas.

Manufacturer: Morse Manufacturing Co., Inc., 762 W. Manlius Street, East Syracuse, N. Y.
For more data circle 3 on Reader Service Card

★ ★ ★

Burnishing Compound

Cycle is a free-flowing, dustless product used to improve burnishing and coloring of metal by barrel tumbling.

(Continued)

Sicon®
HEAT RESISTANT FINISH

PROTECTS ENGINE SHROUDS OF THE
MARTIN MATADOR

When USAF TM-61 Martin Matadors are recalled for servicing and refinishing, SICON Silicone finish is specified because it meets the performance required.

Sicon's ability to withstand high temperatures up to 1000°F. without breakdown has won an enviable name for itself in the aircraft industry, as well as in many others.

Write for new SICON Bulletin—Dept. No. H-6.

MIDLAND
INDUSTRIAL FINISHES COMPANY
WAUKEGAN · ILLINOIS
ENAMELS • SYNTHETICS • LACQUERS • VARNISHES

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NOW YOU CAN SEE "Little Steve" RIGHT IN YOUR OWN PLANT

BRING THIS STEVENS "ROAD SHOW" TO YOUR DOOR

Thousands of visitors to the A.E.S. Exposition saw the "Little Steve" automatic plating and processing machine in action. Perhaps you were one of the many who said they wished others in their organization could see this remarkable machine perform.

Now the mobile display model can be brought directly to you. At your request, a Stevens representative will arrange a special showing. "Little Steve" will be put through its paces before the eyes of your entire staff right in your own plant.

Avail yourself of this remarkable opportunity today. Merely send a request on your company letterhead and a private viewing of "Little Steve" will be promptly arranged. Just address your request to:

frederic b. | **STEVENS,** inc.

DETROIT 16, MICH. | BUFFALO CHICAGO DETROIT CLEVELAND DAYTON NEW HAVEN INDIANAPOLIS SPRINGFIELD (OHIO)

Remember **— When you go *automatic* . . . go STEVENS!**
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New Products . . .

The recently introduced product cuts operating time, does not tarnish brass or rust steel, and helps control hard water build-up, the manufacturer reports.

Cycle helps to remove oil and grease, light rust and oxide coating while metal is being burnished to a high color and bright finish.

Manufacturer: The DuBois Co., Inc., 1120 W. Front St., Cincinnati 3, Ohio.

For more data circle 4 on Reader Service Card

★ ★ ★

Ultrasonic Cleaning System

An ultrasonic cleaning system in a single cabinet, the Sonogen Model H-100, has been introduced by Branson Ultrasonic Corporation. The unit is designed for use in laboratories.

Stainless steel transducerized cleaning tank, generator, and stainless steel rinse tank are housed in a stainless steel cabinet 44 by 33 by 42 inches high, with counter top 32 inches high.

Designed as a basic module, the H-100 can be incorporated into a larger cleaning system. Transducerized rinse tank, heaters with thermostatic control timers, and recirculating filter are easily added.

Flexible spray rinse and air blowoff lines are part of the unit, and both cleaning and rinsing tank have hot and cold water connections.

Industrial cleaning applications include delicate gyros, vacuum tubes, bearings, printed circuits, and com-

(Continued)

NEED HEAT?

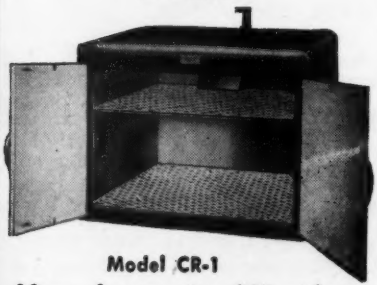
One of our 85 Standard Industrial Ovens will meet your needs.
BENCH • CABINET • WALK-IN TYPES.

For preparation of materials and chemicals for production.

On the production line for intermediate heating.

For baking-on finishes or drying.

GRIEVE-HENDRY OVENS



Model CR-1

10 cu. ft. capacity—30" wide x 25" deep x 24" high. Removable shelves and drip pan. Forced air circulation. Adjustable temperature control to 225° F. $110.50 f.o.b. Chicago

Quick quotations, prompt delivery, reasonable prices on Ovens built to your requirements.

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GRIEVE-HENDRY CO., INC.

1414 W. Carroll Ave., Chicago 7, Illinois

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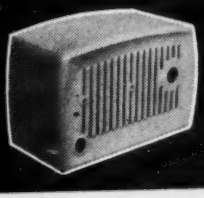

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BUT **FINISH** THE JOB WITH REYNOSOL*!

Reynosol coatings *are as functional as they are decorative . . . as economical as they are reliable. Let Reynolds Chemical creative staff tackle your finishing problem — show you how Reynosol can finish your problem! Write or phone today for full information.*

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plete mechanical assemblies.

Ultrasonic energy at a nominal frequency of 40,000 c.p.s. is generated electronically and converted by a ceramic transducer into mechanical vibrations of the same frequency. Introduced into the cleaning liquid, these vibrations cause cavitation. This phenomenon—the rapid generation and violent collapse of thousands of tiny pressure cells—literally blasts all soils and contaminants from any surface immersed in the liquid.

Manufacturer: Branson Ultrasonic Corporation, 40 Brown House Rd., Stamford, Conn.

For more data circle 5 on Reader Service Card

★ ★ ★

Pearlescent Pigment

The Mearl Corporation has announced Nacromer Z, a synthetic pearlescent pigment said to have great brilliance.

In concentrated paste form, Nacromer Z is available in formulations for use with nitrocellulose, ethylcellulose, vinyl-lacquer, and most other coating vehicles.

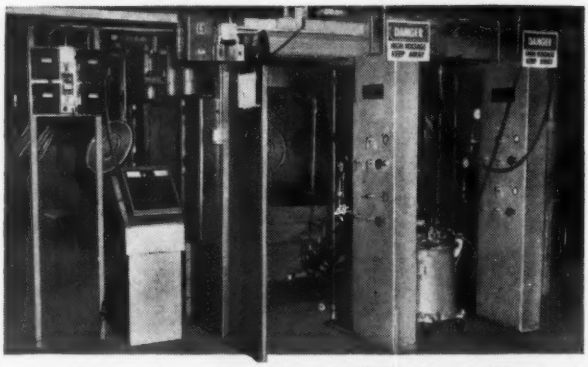
Applied by brush, spray, or dip to wood, metal, plastic, glass, leather, paper, and many other materials, Nacromer Z provides a more lustrous coating than natural essence, Mearl reports.

In addition to simulating natural pearl effects, it is possible to obtain an almost unlimited range of lustrous effects with Nacromer Z by adding transparent pigments or dyes.

(Continued)

AN *Ashdee* Electrostatic **Painting System**

-Your Best Way to Reduce Finishing Costs!



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Let us make a free analysis of your finishing problem . . . a test run of your products in our laboratory . . . and design a system to give you the greatest efficiency and maximum savings. Ashdee systems may be purchased outright or leased.

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IF YOU PAINT OR STRIP PAINT

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CALL THE DuBOIS MAN NEAR YOU LISTED IN THE YELLOW PAGES UNDER "CLEANING COMPOUNDS"

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Nacromer Z is available in two types: "A" with a faintly yellow tone, and "B" with a faintly bluish tone. These color variations are not intense colors but are subtle shadings of the usual "silvery" pearlescent material. The brilliance of Nacromer Z emphasizes these color characteristics.

Additional information and samples of Nacrometer Z are available.

Manufacturer: The Mearl Corporation, 41 East 42nd St., New York 17, New York.

For more data circle **6** on Reader Service Card

★ ★ ★

Peening Method

A peening method called Perfecto-Peen is proving that people who work with metals *should* throw glass.

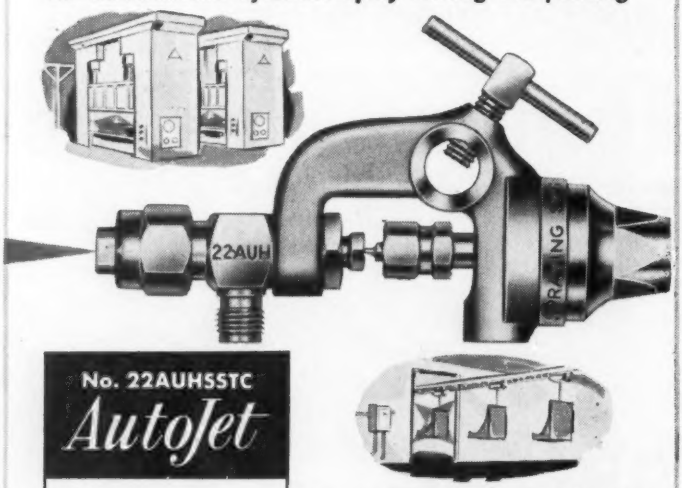
A stream of glass beads microscopic in size and electrostatically suspended in a solution is proving in preliminary tests to be "far superior to other known peening methods," according to Aero-Test Equipment Company, Inc., developer of the process.

Scale, corrosion, dirt, burrs and tool marks are stripped away without removing or altering the dimensions of the basic metal. Perfecto-Peen does not contaminate or leave imbedded particles in the object being peened and it does not nick sharply machined edges or threads.

The tiny glass hammers also seal the metal's pores — leveling and surface working the metal to increase fatigue life and produce finer finishes (up to 4 mu or 1/250,000th of an inch).

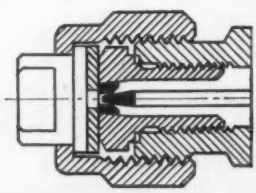
(Continued)

for AUTOMATIC hydraulic spray coating and painting



No. 22AUH5STC
AutoJet

with
TUNGSTEN CARBIDE valve seat and needle
•
STAINLESS STEEL body and cap
•
TEFLON packings



for dependable, trouble-free performance—operates automatically at any required cycling speed, controlled by air actuated shut-off valve. Paint or coatings atomized by hydraulic pressure alone at pressures from 400 to 2,000 psi. Complete choice of interchangeable orifice tips in all spray patterns, capacities and materials.

SPRAYING SYSTEMS CO.
3229 Randolph Street • Bellwood, Illinois

FOR INFORMATION WRITE FOR BULLETIN 96

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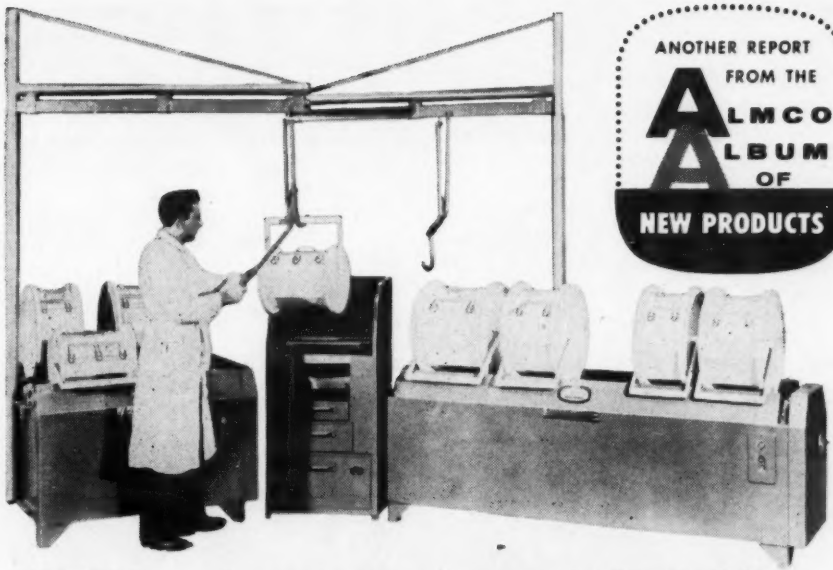

ANOTHER REPORT FROM THE ALMCO ALBUM OF NEW PRODUCTS

NOW... low-cost barrel finishing with NEW ALMCO ROLL BARRELS!

● Better product parts through use of modern barrel finishing can now be yours . . . *at a fraction of previous time and cost!*

New low-cost ALMCO Supersheen Roll Barrels provide greater deburring and finishing capacity in less floor space than do small standard barrels . . . and they're more adaptable, too.

Roll Barrel System shown above, for example, includes Multi-Roll "36", Multi-Roll "78", time-saving loading cabinet, and easy-to-use hoist boom. Nine different barrel sizes provide wide range of speeds and capacities. Using only one barrel or many, one man operates entire system.

For Full Story on Roll Barrel Systems and on processing sample parts, write for ALMCO Album of New Products...*today*!

FREE!
NEW PRODUCT ALBUM
Gives full information on new Almco Supersheen Systems. Describes new and better machines, methods and media. Write today!

ALMCO
QUEEN PRODUCTS DIVISION
King-Seeley Corporation
88 E. Main Street
Albert Lea, Minnesota

For more data circle 354 on Postpaid Card

Perfecto-Peen is electrostatic suspension of the spheres in solution to provide uniform impact distribution. Otherwise the equipment is much like other peening machines, working from a compressed air supply with the solution forced through a valve gun. Variation can be made in size of spheres, force of peening stream, and duration of peening.

The developer recommends this method for removing tough mill scale from raw titanium and for fine polishing of precision gear teeth, or any other wearing part. The surface of an entire airplane can be cleaned and stress relieved with this equipment, the developer reports.

Developer: Aero-Test Equipment Co., Inc., 1601 Dragon St., Dallas 7, Texas.

For more data circle **7** on Reader Service Card

★ ★ ★

Smut Remover

Hydra - Blast Manufacturing Div. of Automation Services, Inc., has developed a process for removing smut from metals.

Smut usually appears on the surface of metals after etching, pickling and chemical milling.

The Hydra-Blast process removes this smut rapidly. After rinsing, the surface is clean and receptive to plating, painting, anodizing and phosphatizing.

Manufacturer: Hydra - Blast Manufacturing Div., Automation Services, Inc., P.O. Box 5554, Detroit 38, Michigan.

For more data circle **8** on Reader Service Card

COROCRETE...

Quickly and easily applied, COROCRETE offers the greatest floor surfacing protection available today. Corocrete is 4 times stronger than concrete . . . is resistant to impact and abrasion . . . sets up faster . . . and is guaranteed protection against acids, alkalies and solvents. COROCRETE is recommended in chemical and food processing, plating and metal working industries.

COROCRETE is an exclusive development of CEILCOTE . . . a name long recognized as leader in the corrosion industry. Write today for catalog!

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willingly wear
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NL-34 NL-42 NL-52 VL-34 NS-35*

Pioneer Knit-Cotton Lined Gloves with Non-Slip Grip

Style	Material	Weight	Color	Lining	Length
Stanzoil NL-34	Neoprene	Light	Blue/Black	Knit Cotton	10½"
Stanzoil NL-42	Neoprene	Heavy	Blue/Black	Knit Cotton	12"
Stanzoil NL-52	Neoprene	Heavy	Blue/Black	Knit Cotton	14"
Stanflex VL-34	Pylox	Medium	Red	Knit Cotton	10½"
Stanzoil NS-35	Neoprene	Light	Red	Cotton Flock*	10½"

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☐ 17" x 22" Full Line Glove Wall Chart

☐ Job Description Form For Free Hand Protection Analysis (Lined)

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City_____

Zone____ State_____

Requested by

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the PIONEER Rubber Company
285 Tiffin Road, Willard, Ohio
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Simulated Plate

A finish developed by Maas & Waldstein Co. simulates brass, gold, copper, bronze and other finishes over bright nickel plate. The product also provides a protective coating.

Trade named "Platelustre," the recently introduced material permits the plater to offer his customers "plated finished effects" over nickel plate without installing plating tanks for brass, gold, copper and bronze. Platelustre finishes are applied by standard spray or dip processes.

Manufacturer: Maas & Waldstein Co., Inc., McCarter Highway, Newark, New Jersey.

For more data circle **9** on Reader Service Card

★ ★ ★

High-Vacuum Pump

A simplified titanium gettering pump which utilizes the chemical reaction between gases and titanium vapor to produce vacuums in the range of 50 microns to 1 x 10^{-9} mm. Hg has been developed by NRC Equipment Corporation.

Said to be cheaper than previous equipment of this type, this unit is expected to be useful in applications where it is important to avoid even a trace of backstreaming fluid in the vacuum chamber and where it is desirable to pump down and maintain either an open system or a closed chamber at high vacuum for long periods of time.

Pumpdown speed is approximately five liters per second.

The pump may be used directly

(Continued)

Formax manufactures a complete line of Buffing and Polishing Compounds in bar, tube and liquid form suitable for all classes of metal, plastic and lacquer finishes. Formax compounds used together with the famous Formax ZIPPO long wearing buffing wheels make a combination that's hard to beat. Our extensive manufacturing, laboratory and testing facilities are always at your disposal.

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"THE FOUR McALEERS"

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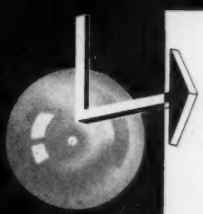
can help you achieve better results from your blast equipment

Microbeads Glas-shot are microscopic glass beads for use with all types of wet or dry blast equipment. Uniformly spherical in shape, Microbeads Glas-shot withstands the rigors of blasting and resists shattering.

Glas-shot are available in a wide range of mesh sizes for cleaning, polishing, peening or finishing any material normally processed with blast equipment. Because they have an extremely low metal removal rate, excellent results may be achieved where close tolerances must be held.

Microbeads Glas-shot possess a number of advantages unavailable in any other abrasive. Why not investigate their possibilities.

FOR COMPLETE INFORMATION AND SAMPLES . . .
JUST MAIL THE COUPON BELOW



Microscopic Glass Beads for Industrial and Reflective Purposes

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☐ **Send information and samples**
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are Pure, Brilliant Metallic Bronze!

- **by the brilliant sheen and full-bodied lustre!**
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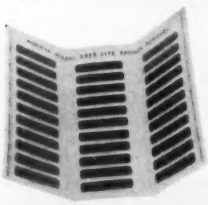
Unequalled for smoother, more brilliant Plated-Effect Finishes—by spray, dip or flow coating.

IN STOCK—tremendous selection of colors including popular metallic pastels, statuary and antique shades.

COLORS MATCHED—with no variance in quality, color or lustre from batch to batch. Fast service guaranteed.

SPECIAL COLORS—Over 25 years experience in creating special colors and shades for the plastic and metal finishing trades. Satisfaction assured.



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Full Range of Colors for Immediate Delivery

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following mechanical pumping to the 10 micron level or below. More efficiently, it can be used following pumping by trapped oil or mercury diffusion pumps or molecular drag pumps where pressures in the range of 10^{-4} mm. Hg are attained first.

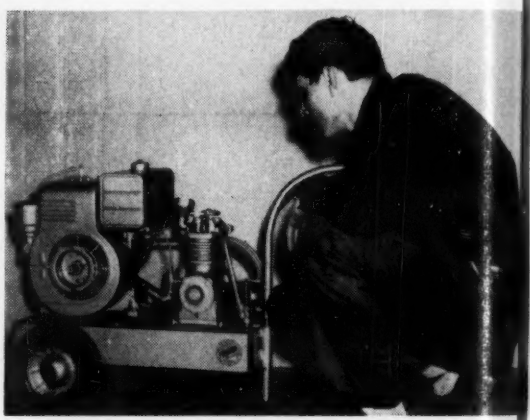
Manufacturer: NRC Equipment Corporation, 160 Charlemont St., Newton 61, Mass.

For more data circle **10** on Reader Service Card

★ ★ ★

Portable Compressor

A compressor recently introduced by Binks Manufacturing Co. is mounted on wheels to facilitate moving from place to place. The unit has a 2½-



Binks Portable Air Compressor: built for long service in spray painting systems

h.p. engine, is available in two models: 33-1106, which produces 50-60 p.s.i., and 33-1107, which produces 70-80 p.s.i.

Manufacturer: Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago, Illinois.

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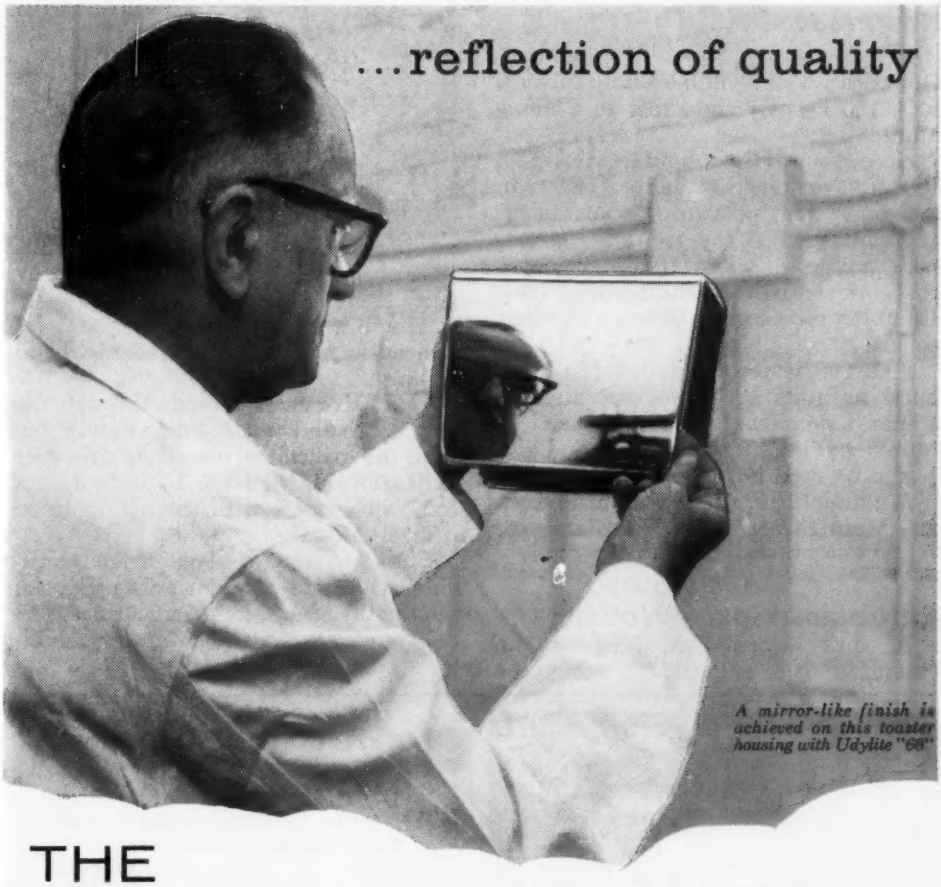
★ ★ ★

Pre-Paint Water-Soluble Acidic Solvent

In addition to passivating and phosphatizing all types of metals, Fine

(Continued)



THE INCOMPARABLE "66"

Udylite's Bright Nickel Process "66" is sweeping the country with new installations and conversions to provide a truly incomparable plate with almost unbelievable ease of operation. The color of the process alone, sells "66" in any comparison.

The production of your existing equipment can be *greatly increased* with the introduction of Process "66". Its outstanding qualities include exceptional levelling ability and remarkable ductility for so bright a finish.

In addition, Process "66" has overcome the problems previously considered inherent in plating over semi-bright nickel and, it is unusually receptive to chromium. You'll find that the amazing adaptability of this very bright finish makes it suitable for your finest work . . . moreover it will save you money.

A phone call or letter will start Udylite's "66" Bright Nickel process on its way to help you improve your production. If it sounds too good to be true, just send us a sample of your product . . . we will be happy to test-plate it for you with Incomparable "66". Act TODAY!

SUPER "66" For even greater brightness and levelling where absolute maximum ductility is not demanded, Udylite's SUPER "66" may be specified. You must see this finish to believe its brilliance.

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Organics's water-soluble acidic solvent, F.O. 190 keeps weight loss to a minimum.

According to the manufacturer, F.O. 190 removes oil, rust and corrosion in one operation, providing a corrosion-resistant surface for uniform, permanent paint adhesion. It also removes rust preventives, identification inks, stamping oils, carbon smuts and other soils.

F.O. 190 is recommended for small parts or units as big as airplanes. It is non-flammable. It can be used in four ways: brush, swab, spray and dip. It can be used hot or cold.

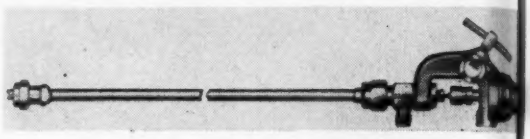
Manufacturer: Fine Organics, Inc., 205 Main Street, Lodi, New Jersey.

For more data circle 12 on Reader Service Card

★ ★ ★

Extension Spray Nozzle

A spray nozzle mounted on an extension is designed to bring the nozzle closer to the work being painted in operations where space is too limited for mounting the complete spray gun assembly.



Spraying Systems' Extension Spray Nozzle

The unit is designed for spraying by hydraulic pressure at pressures up to 125 p.s.i.

The valve stem extends through the extension and seats immediately behind the orifice tip, providing drip-free instantaneous shut-off. Liquids do not come in contact with the air-operated control valve.

Standard lengths of extensions available: eight, 18 and 24 inches. Special lengths available to specifications.

Literature available from the manu-

(Continued)

FICTION and FACT

RP® PAINT ARRESTORS

FICTION: Paint Overspray Control Requires Complicated and Expensive Maintenance Procedure.

FACT: An R P Paint Arrestor Equipped Booth Can Be Changed In Minutes By Inexperienced Personnel.

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Inexpensive R P Paint Arrestors are easily replaced in a short time to provide like-new paint overspray removal efficiency, with minimum down-time, at a fraction of usual maintenance costs. Economical original installation, too—and adaptable to almost every type operation, R P Paint Arrestors can cut costs, increase production in your booths, too. Write for information.

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KOCH'S team of experienced engineers are only a call away. KOCH FINISHING SYSTEMS for wood or metal are designed to improve your present production and flexible enough to meet future expansions at a very low cost.

KOCH FINISHING SYSTEMS assure you of quality production with increased volume while cutting costs . . . peak efficiency operation with the lowest unit cost. Give us an opportunity to show you how you can improve your present installation. Your call to KOCH does not obligate you in any way.

DUST and FUME REMOVAL SYSTEMS

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COMPLETE FINISHING SYSTEMS FOR WOOD and METAL

GEORGE KOCH SONS, INC.
Evansville 4, Indiana

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facturer gives complete details. Specify data sheet 8286.

Manufacturer: Spraying Systems Co., 3229 Randolph St., Bellwood, Ill.
For more data circle **13** on Reader Service Card

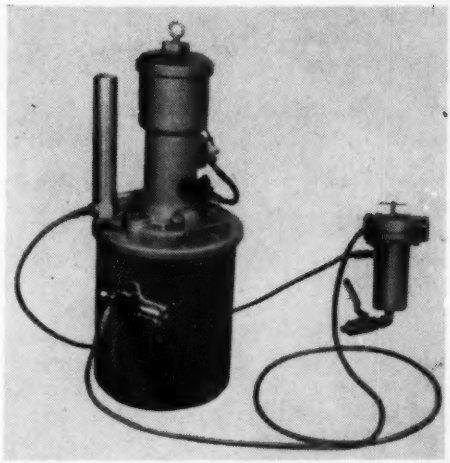
★ ★ ★

Airless Spray Equipment

The HydraAirless 20 airless spray painting system recently introduced by Spee-Flo Company makes possible spray painting in open areas with relatively simple equipment. The unit uses no atomizing air or heat in applying the paint. High pressure atomizes the paint.

The unit is made so that it can be converted for hot airless spray merely by attaching a paint heater and recirculating unit to the basic equipment.

The Spee-Flo airless unit has double-action pump that delivers paint on both up and down stroke; wear-resistant parts and tungsten carbide valve seats; and an air motor divorced from the pump.



HydraAirless 20 Airless Spray Equipment

Manufacturer: Spee-Flo Co., 6614 Harrisburg Blvd., Houston 11, Texas.
For more data circle **14** on Reader Service Card

PAINT STRIPPER

THE NEW MIRACLE

STRIPEX #153

NO HEAT NECESSARY!

A mild steel tank is all that is required. Strips All Types of Baked Enamels.
Some Baked Coatings are Stripped Clean in a matter of Seconds.
Excellent for stripping vacuum metallizing racks.

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DYTEX

Chemical Specialties

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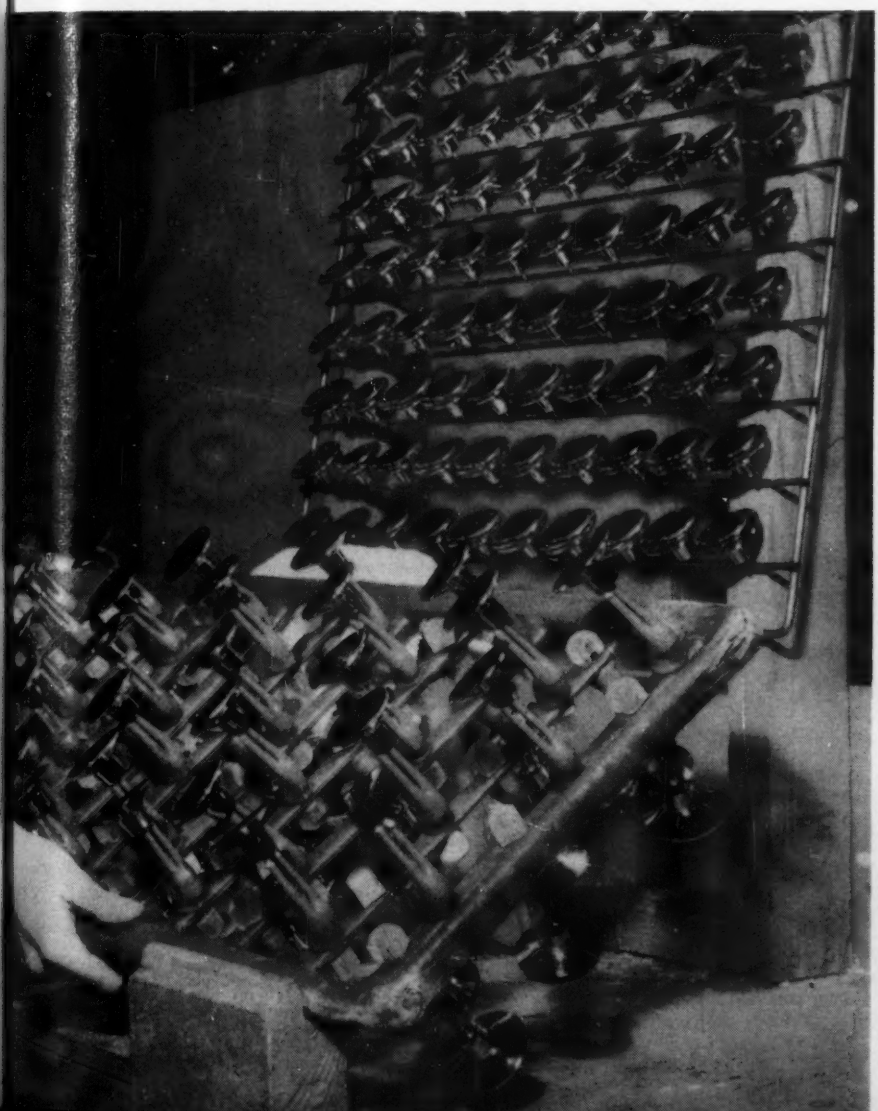
For more data on advertisement on opposite page, circle 364 on Postpaid Card →

Unique new brightener for zinc and cadmium plated parts has been developed by Federated: CONMAX, a conversion coating for plated finishes from brilliant to iridescent, provides corrosion resistant film to zinc and cadmium plate. Other high quality, low-cost brighteners from Federated: ZIMAX for all types of zinc plating, still, automatic, and barrel; CADMAX for cadmium plating; NIMAX, highly concentrated brightener for nickel barrel plating. These brighteners undergo rigid competitive tests before approval for sale. This also applies to Federated's complete line of plating anodes and nickel salts. It's safest when you specify plating supplies from Federated Metals Division of American Smelting and Refining Company, 120 Broadway, New York 5, N. Y. In Canada, Federated Metals Canada, Ltd., Toronto and Montreal.

FEDERATED METALS DIVISION OF



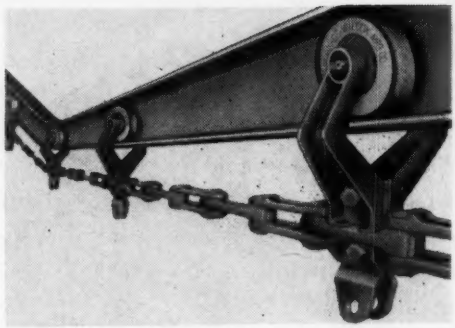
ASARCO

AMERICAN SMELTING AND REFINING COMPANY

Overhead Chain Conveyor

Richards-Wilcox Manufacturing Co. has announced the R-W No. 458 overhead chain conveyor system, a Keystone rivetless-type endless chain supported by load-carrying trolleys which roll on the lower flanges of a four-inch I-Beam track. The chain is mechanically propelled and is supported at all horizontal turns by a series of rollers or wheels while the track absorbs the thrust on vertical bends.

Richards-Wilcox reports that this conveying system offers the following advantages: utilizes free overhead area; is extremely flexible—goes up, down, in, out or around; equally adaptable to level or multi-plane systems; easy to install; may be "added-on" to present systems of similar design; easily "knocked-down" for expansion or relocation of plant facilities.



R-W No. 458 Overhead Chain Conveyor

Manufacturer: Richards-Wilcox Mfg. Co., Third St., Aurora, Ill.

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★ ★ ★

Industrial Aerosol Products

A complete line of aerosol products for industry, introduced by Sprayon

(Continued)

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Technological knowledge acquired through many years of experience, plus special processes and equipment, assure the high quality of our Rhodium Plating Solutions.

Recommended for contact surfaces of switches, waveguide parts and other electrical applications, such as printed circuits...Can be applied in extremely heavy deposits, up to 100 milligrams per square inch.

Rhodium plating provides the advantages of whiteness, lustre and corrosion resistance of a precious metal.

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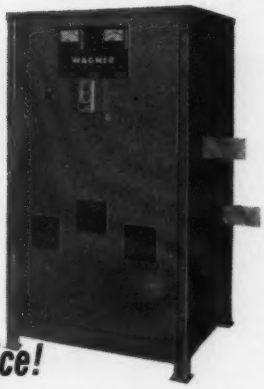
WAGNER

SILICON RECTIFIERS



Designed to match a process—not to meet a price!

Wagner Rectifiers are *process engineered* to give uninterrupted power that matches your process, assuring highest efficiency from both equipment and process.

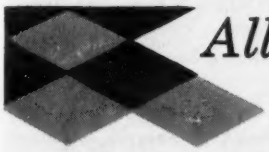
In addition, their important engineering features make them far superior to anything on the market . . . yet they are priced competitive to comparable quality.

Insist on These 5 Wagner Features in Your Next Rectifier:

1. **CUSTOM-BUILT**—to do more than just meet your routine power needs . . . they're built to take the unexpected that occurs in every shop. Momentary extra heavy loads and short circuits are completely and harmlessly absorbed—without cell failure and without shortening rectifier life.
2. **MORE RECTIFICATION AREA**—twice the cells found in ordinary rectifiers, with each cell having over 2½ times the usual rectification area. This gives a uniform power supply, fewer operating troubles, maximum efficiency!
3. **UNIQUE COOLING SYSTEM**—a special-type blower and strategically located baffles force pressurized air directly across the cells, assuring longer cell life and highest possible cell efficiency.
4. **OVERLOAD PROTECTION**—protective devices shut down rectifier before highly unusual overload or other dangerous situation causes damage.
5. **RUGGED COMPONENTS**—Wagner-built transformers have Class B insulation (inorganic materials) . . . bus bars are silver plated . . . housings are ruggedly built . . . meters are sealed to protect their precision accuracy.

Wagner Silicon Rectifiers are available in capacities from 500 to 50,000 amperes with full selection of controls for manual or automatic regulation. Wagner Selenium Rectifiers also available in same capacity range.

Ask your Allied Field Engineer about the many advanced features of Wagner Rectifiers and how they can benefit you in your operations. You'll find his name listed under "Plating Supplies" in the yellow pages. Or, write for FREE TECHNICAL DATA FILES.



Allied Research Products, Inc.

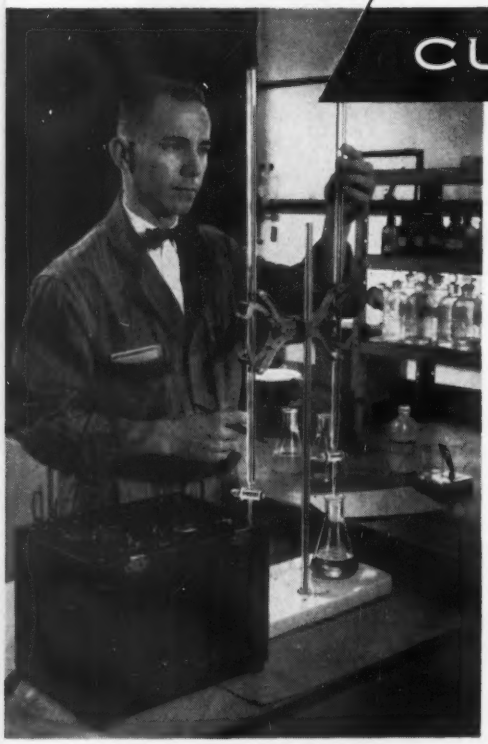
4004-06 EAST MONUMENT STREET • BALTIMORE 5, MARYLAND
BRANCH PLANT: 400 MIDLAND AVENUE • DETROIT 3, MICHIGAN
West Coast Licensee for Process Chemicals: L. H. Butcher Co.
Chemical and Electrochemical Processes, Anodes, Rectifiers Equipment, and Supplies for Metal Finishing

IRIDITE®	IRILAC™	ISOBRITE®	ARP®	WAGNER
Chromate Coatings	Clear Coatings	Plating Brighteners	Chemicals & Supplies	Line of Equipment

For more data circle 366 on Postpaid Card

consult the..... *Roto-Finish*

CUSTOMER'S MAN

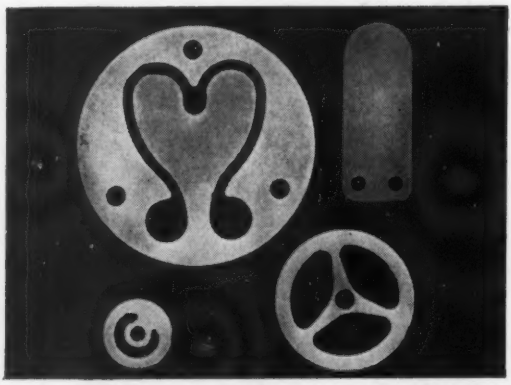


FOR FINISHING PLUS + RESEARCH and TECHNICAL ASSISTANCE

Faced with the problem of cutting down finishing costs with no sacrifice in product quality, more and more production and management men are turning to Roto-Finish for complete finishing *service*.

In the Roto-Finish Laboratory, technicians analyze your problem to determine the process which provides the desired finish at minimum cost. Often, it is necessary *to develop a new compound* to meet a specific need.

Test runs are then made in the Roto-Finish Processing Department under production conditions. If desired, your local Roto-Finish Customer's Man will run these tests in your own plant; so that you can check the results at first hand, results like this . . .



Roto-Finish CASE HISTORY

PART: Refrigeration compressor flapper valves.
MATERIAL: Swedish steel.
OPERATIONS PERFORMED: Deburr. Generate full radii on all edges. Remove stress risers.
RESULT: Fatigue resistance increased 500%.

ROTO FINISH®

Roto-Finish **COMPANY**
3704 Milham Road, Kalamazoo, Michigan
Phone: Fireside 3-5578

FOREIGN REPRESENTATIVES: ARGENTINA—Taller—Buenos Aires ● AUSTRALIA—A. Flavell Ltd.—Cheltenham ● BRAZIL—Commercial E. Industrial de Fornos Werco, Ltd.—Rio de Janeiro ● CANADA—Canadian Hanson & Van Winkle Co., Ltd. —Toronto ● ENGLAND—Roto-Finish Ltd. — Hemel Hempstead ● FRANCE—Societe Roto-Finish—Paris ● GERMANY. AUSTRIA, NORWAY, SWEDEN, SWITZERLAND—Metallgesellschaft A. G.—Frankfurt, a. M.—Germany ● HOLLAND, BELGIUM, LUXEMBURG—N. V. Roto Finish Maatschappij—Delft, Holland ● ITALY—Societa Roto-Finish a R. L.—Milan ● SPAIN—Instituto Electroquimico, S. A.—Barcelona

Products, Inc., Cleveland, Ohio, is described as the key to "push-button maintenance." The line consists of 47 maintenance and production aids in self-spraying containers.

Lubricant: one of 47 aerosol products

The Sprayon line includes enamels and marking paints, standard equipment finishes, special lubricants, protective coatings, and degreasers. It covers virtually every self-spraying product used in industry, from silicone mold release to blue layout fluid.

Also included is the Sprayon "Jet-Pak" sprayer, a re-usable self-powered spray gun that sprays any liquid at the touch of a button.

An aerosol lubricant is one of 47 self-spraying materials in Sprayon Products' line of industrial aerosol products.

A free handbook of "Aerosols for Industry" is available from the manufacturer.

Manufacturer: Industrial Supply Division, Sprayon Products, Inc., 2077 E. 65th St., Cleveland 3, Ohio.

For more data circle **16** on Reader Service Card

Heated Ultrasonic Cleaning Tank

Heated ultrasonic cleaning machines are now available from Branson Ultrasonic Corp. Integral heater, dual thermostatic control and twin-wall construction are standard equipment.

Heating elements are attached to the walls of the tank. The ceramic transducers, which convert electrical impulses from the ultrasonic generator into mechanical vibrations, are mounted against the bottom to provide a uniform cleaning field throughout the tank. All elements are enclosed and protected by an outer jacket.

One thermostat maintains liquid temperatures at the desired level; the other disconnects the heater when the tank is empty.

A complete system consists of one or more tank/transducers connected to an ultrasonic generator. Power fed from the generator to the transducer is converted to mechanical vibrations and transmitted to the cleaning liquid in the tank. These vibrations cause cavi-

(Continued)

Branson Heated Ultrasonic Cleaning Tank

For more data on advertisement on opposite page, circle 367 on Postpaid Card

tation which, in effect, acts like thousands of tiny scrub-brushes on any surface the liquid touches.

Manufacturer: Branson Ultrasonic Corp., 40 Brown House Rd., Stamford, Connecticut.

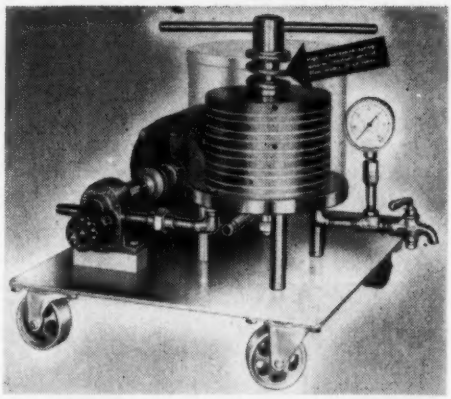
For more data circle **17** on Reader Service Card

★ ★ ★

Positive-Seal Enclosed-Type Filter

Model ECS Positive Seal Cylinder Disc Filter has a high-compression spring, which assures a constant seal of the filter media at all times with a single tightening assembly. A perfect seal or gasket is maintained, the manufacturer states.

Completely enclosed, this filter prevents loss of material by evaporation. It is easy to assemble and disassemble.



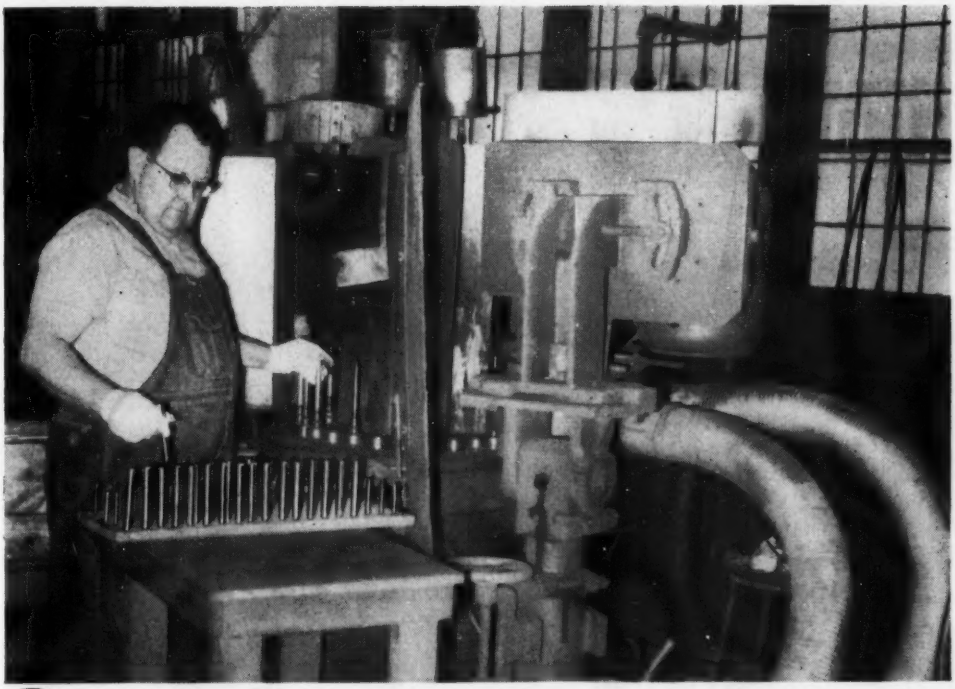
Ertel Positive-Seal Cylinder Disc Filter

Complete information is available in Bulletin 19-S, available from the manufacturer.

Manufacturer: Ertel Engineering Corp. 8-14 N. Front St., Kingston, New York.

For more data circle **18** on Reader Service Card

For more data circle 368 on Postpaid Card



a mere 5 million flashlights old...

Purchased by Ray-O-Vac for use at their Clinton, Mass. plant in 1956, this Model 4-28 Packer-Matic has been producing high luster finishes on flashlight cases at the rate of 900 per hour . . . 8 hours each day . . . 200 days every year . . . steadily and successfully without downtime for costly repairs or maintenance. Yet it is still a "newcomer" at Ray-O-Vac.

The picture shows operator Thomas Baird loading Ray-O-Vac Pen-Lite cases, one of the smaller tubes this versatile spindle automatic handles. Tom regularly uses 5 other sets of tooling developed for the wide variety of flashlight cases Ray-O-Vac manufactures.

"Best thing I can say about our 8 Packer-Matics, reports Mr. R. M. Goodwin, Ray-O-Vac Plant Manager is that we've used them since 1934 and they've never let us down. We can always count on our Packer-Matics to make production."

You can, too. Send us samples of your parts, specifications or blueprints. Polishing, deburring or cleaning.

Production reliability makes Packer-Matic the choice of companies like

RAY-O-VAC COMPANY

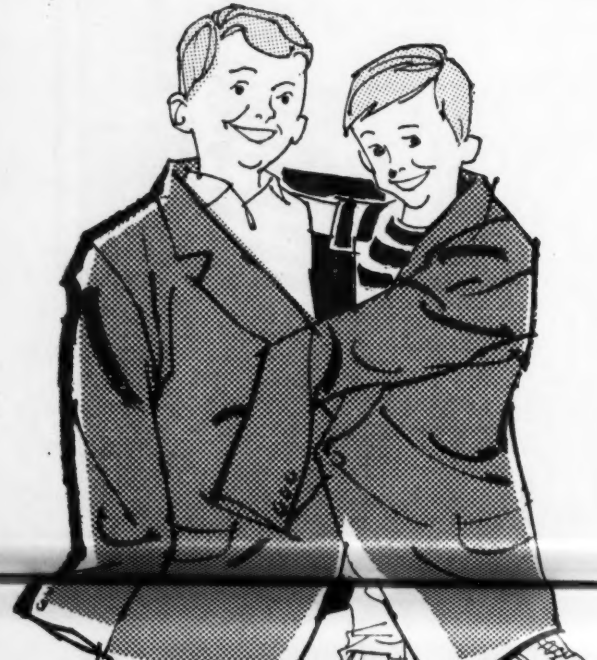
PACKER-MATIC

THE PACKER MACHINE COMPANY • MERIDEN, CONN.

Pioneer Manufacturers of Automatic Polishing & Buffing Machines

For more data circle 369 on Postpaid Card

One coat does the job of two with Lowe Feuzon



Here's another example of what can happen when one of Lowe Brothers finishing engineers understands your problem. Check this engineer's report:

"The paint department foreman said that it was necessary to apply 2 or 3 coats for good coverage — especially when the metal had dark spots. He tried an order of Feuzon Gray Metallic and found it covered beautifully with one coat. When he has used up the competitive material in stock, he'll order our Lowe Feuzon."

Lowe Brothers finishing engineers are trained to find ways to cut painting costs. They're experts on paints *and* finishing methods. Your nearby engineer will gladly make a "flow-chart" analysis of your finishing system. No obligation. Just send the

Lowe Brothers finishing engineers are trained to find ways to cut painting costs. They're experts on paints *and* finishing methods. Your nearby engineer will gladly make a "flow-chart" analysis of your finishing system.

No obligation. Just send the coupon.

LOWE BROTHERS
INDUSTRIAL FINISHES

QUALITY UNSURPASSED SINCE 1870

Style-tested paints for Home and Industry

REPRESENTATIVES IN: Chicago, Ill. • Boston, Mass. • Jersey City, N. J. • Cleveland, Ohio • Pittsburgh, Pa. • Rochester, N. Y. • Dayton, Ohio • Columbus, Ohio • Milwaukee, Wis. • Indianapolis, Ind. • Cincinnati, Ohio • Detroit, Mich. • Springfield, Mass. • Philadelphia, Pa.

The Lowe Brothers Company PF-8
Dayton 2, Ohio

☐ Please have my nearest Lowe Brothers Finishing Engineer call on me as soon as possible.

NAME_____

TITLE_____

FIRM NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

For more data circle 370 on Postpaid Card

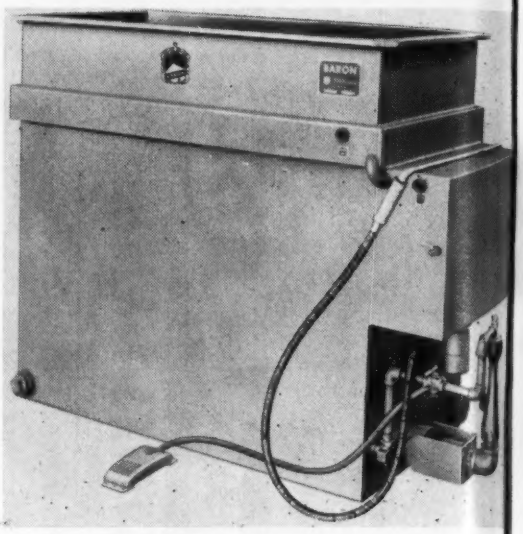
Vapor Spray Degreaser

The "Baronet" standard series of Vapor Spray Degreasers has been announced by Baron Industries.

The new standard series consists of 5 Baronet models. Interior lengths range from 3 to 8 feet, while the inside depth and width of each is a uniform 24 by 24 inches. The compact degreasers utilize a trichlorethylene vapor to dissolve greases, oils and waxes from all ferrous and non-ferrous metals. Thorough cleaning and drying of parts by vapor condensation and a hand spray rinse is quickly accomplished.

The Baronet degreasers will efficiently handle a work load of from 1,600 to 2,000 pounds per hour, depending upon the size of the unit.

Standard equipment includes special leakproof pump and water separator,



Baronet Vapor Spray Degreaser: less solvent

foot switch and aluminum spray lance. In addition, each machine is equipped with the new Baron Econ-O-Lid, so that the degreaser may be kept closed except during loading and unloading operations. The manufacturer states that solvent consumption is thereby reduced.

Literature available from the manufacturer.

Manufacturer: Baron Industries, 241 West Avenue 26, Los Angeles 31, California.

For more data circle **19** on Reader Service Card

★ ★ ★

Modular Ultrasonic Cleaning Equipment

A line of ultrasonic cleaning equipment recently introduced by Gulton Industries, Inc., features interchangeable components which can be assembled in combinations to meet individual requirements for power and volume.

The Glennite-trade-named line of ultrasonic equipment includes five separate tank sizes (½ to 25 gallons)

(Continued)

For more data circle 371 on Postpaid Card

there's a place for
PRESSURE BLAST
in your plant

Rough cleaning problem? Parts delicate or intricate in shape? Micro-inch finish requirements close? *Pressure Blast* removes scale, oxides and all types of discoloration without stock removal. Delivers RMS readings as low as 6.

Hand deburring sending costs up? *Pressure Blast* can do the job! Regardless of burr location or size, type of metal, if it's a true burr and not extruded, *Pressure Blast* can handle it.

Having difficulty preparing surfaces for plating? *Pressure Blast* offers basis metal cleanliness and microscopically etched finishes for strong mechanical and electro-chemical bond.

And that's not all... with *Pressure Blast* you can reduce die and mold maintenance costs, hone HSS and carbide cutting tools for longer work life, increase lubrication retention of bearing surfaces, blend tool marks and hundreds of other cost-cutting applications.

Pressure Blast abrasives for *all types* of wet blast equipment:

- 8 different materials meet every application requirement
- size range from 60 to 5000 mesh
- stocked in all principal cities

AUTOMATIC
One of many custom units designed and built to customer specifications.

MODEL A
The popular standard manually-operated unit with high and regular velocity circuits.

MODEL JR.
One of 6 standard units in the Pressure Blast line.

Write today for complete descriptive literature on Pressure Blast equipment and abrasives. Or, send samples with "specs" for free test processing.

PRESSURE BLAST MFG. CO., INC.
75 Pleasant Street, Manchester, Conn.

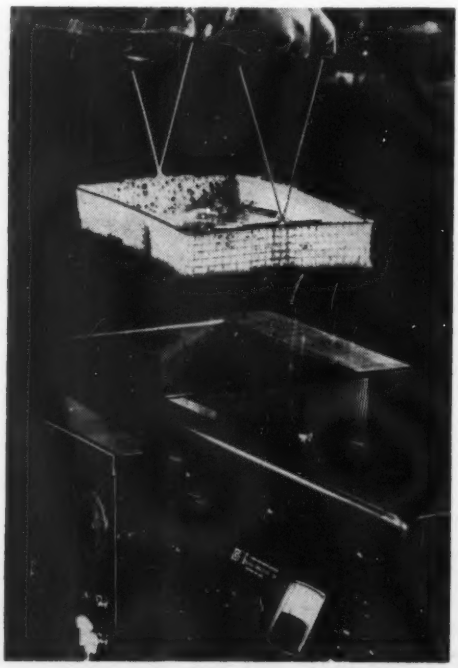
For more data circle 372 on Postpaid Card

and six preset generators (50 to 2000 watts).

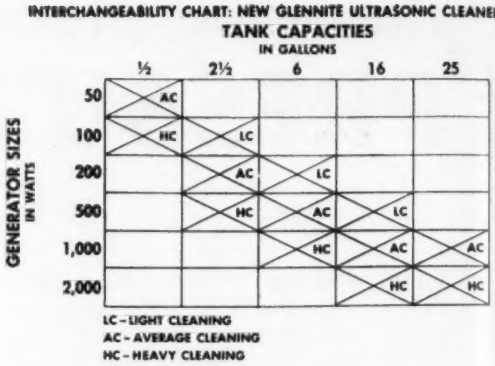
Transducers are side mounted to aid in eliminating mismatches caused by varying water levels and physical loads.

Since all of the generators can be used on any of the various sizes of tanks, the user can select a combination of power source and tank volume to suit his individual need. Transducers are added to the side of the tank as required by the size of the generator being used.

This modular system permits the user of ultrasonic equipment to power tanks of any size with generators sized to perform light, medium, or heavy cleaning jobs by merely selecting the proper size of generator and then adding or subtracting transducers to match the power of the generator.



Glennite Modular Ultrasonic Cleaning System



Graph shows how different generator sizes can be used with various tank capacities to supply power needed for light, average or heavy cleaning jobs

Manufacturer: Vibro-Ceramics Div., Gulton Industries, Inc., Metuchen, New Jersey.

For more data circle **20** on Reader Service Card

★ ★ ★

Titanium Anode Hook

A titanium anode hook recently introduced by Plating Products Co. is said to be unharmed by immersion in chromium, nickel and acid copper plating solutions.

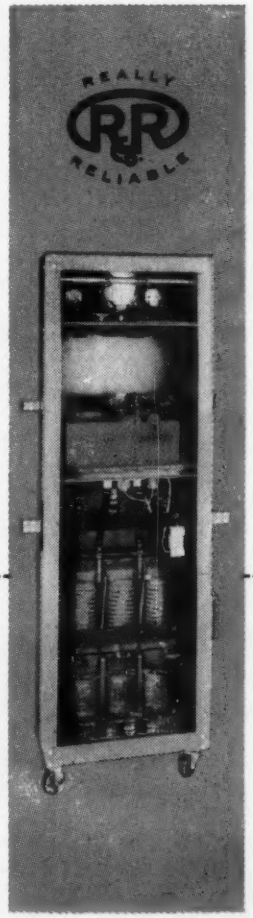
Titanium Anode Hook

The titanium anode hooks can be completely submerged in the plating solution without being subject to chemical or electrochemical attack, the manufacturer states.

Since hooks are not attacked they can be completely immersed in the plating solution to minimize scrap loss. They will not contaminate the

(Continued)

FROM GENERAL INSTRUMENT CORPORATION



BY NOW THE CHOICE IS CLEAR!

in plating equipment

only Radio Receptor

Tri-Amp Rectifiers*

deliver ***ALL***

the advantages...

- Higher efficiency.
- Excellent overload characteristics.
- Complete and higher reliability.
- No sudden failure.
- No special protective devices required.
- Operate in parallel or series without special precautions.

*Radio Receptor's Tri-Amp is a completely different concept in selenium. Rectification is accomplished through a P-N junction formed by a closely controlled diffusion process involving the use of cadmium-selenide and tellurium. No artificial barrier layer is used in the Tri-Amp thus eliminating the cause of aging and high voltage drop.

General Instrument, specialists in all types of semiconductors, finds that Tri-Amp is demonstrably superior in plating equipment. Leading manufacturers now use Tri-Amp as standard components in their plating rectifiers and a list of users, plus more detailed information, is available upon request. Write today to Section PF1.

RR RADIO RECEPTOR
AUTOMATIC

GI

RADIO RECEPTOR COMPANY, INC.
Subsidiary of General Instrument Corporation
240 Wythe Avenue, Brooklyn 11, N. Y.

General Instrument Corporation includes F. W. Sickles Division, Automatic Manufacturing Division, Radio Receptor Company, Inc. and Micamold Electronics Manufacturing Corporation (Subsidiaries)

For more data circle 373 on Postpaid Card

solution with foreign metal ions. Threads will not decompose in the plating solution. Titanium will not generate gas by electrolysis or decompose brighteners.

Hooks are made of ⅜-inch square stock in 3½ through 8-inch lengths to fit anode rods 1½ inches or less in diameter.

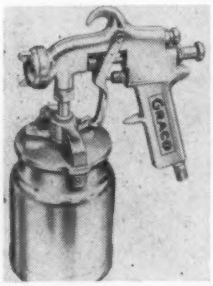
Manufacturer: Plating Products, Inc., 1500 N. Washington St., Kokomo, Indiana.

For more data circle **21** on Reader Service Card

★ ★ ★

Cup-Type Spray Gun

A lightweight cup gun for spraying paints, enamels and lacquers has been announced by Gray Company, Inc.



Lightweight Gun

This spray gun has a two-piece, aluminum alloy body with a built-in air distributor. The gun requires no gaskets in tip or cap assembly.

All fluid tips and male threads are stainless steel.

The one-piece, drawn aluminum paint cup has a fast-acting spider lock and cover-supported yoke clamp that securely holds the cup without straining the lock pins.

For additional information, write for folder 300-025.

Manufacturer: Gray Company, Inc., 60-11th Ave., N.E., Minneapolis 13, Minnesota.

For more data circle **22** on Reader Service Card

★ ★ ★

Sealant Mixing Machine

Description: A portable electric sealant-mixing machine is useful in preparing caulking compounds for aircraft, automotive, marine, construction, and electrical applications.

The machine mixes sealants and extrudes the mixture into disposable polyethylene cartridges for use with hand or powered sealant guns. Up to one gallon of sealant may be mixed at one time in the standard gallon can in which the material comes.

Manufacturer: Semco Sales and Service, Inc., 3141 West Century Blvd., Inglewood 4, Calif.

For more data circle **23** on Reader Service Card

YOUNG BROTHERS *Baking and Drying* **OVENS**

designed and built for
every product and process requirement

Batch and Conveyor types up to 1000° F.

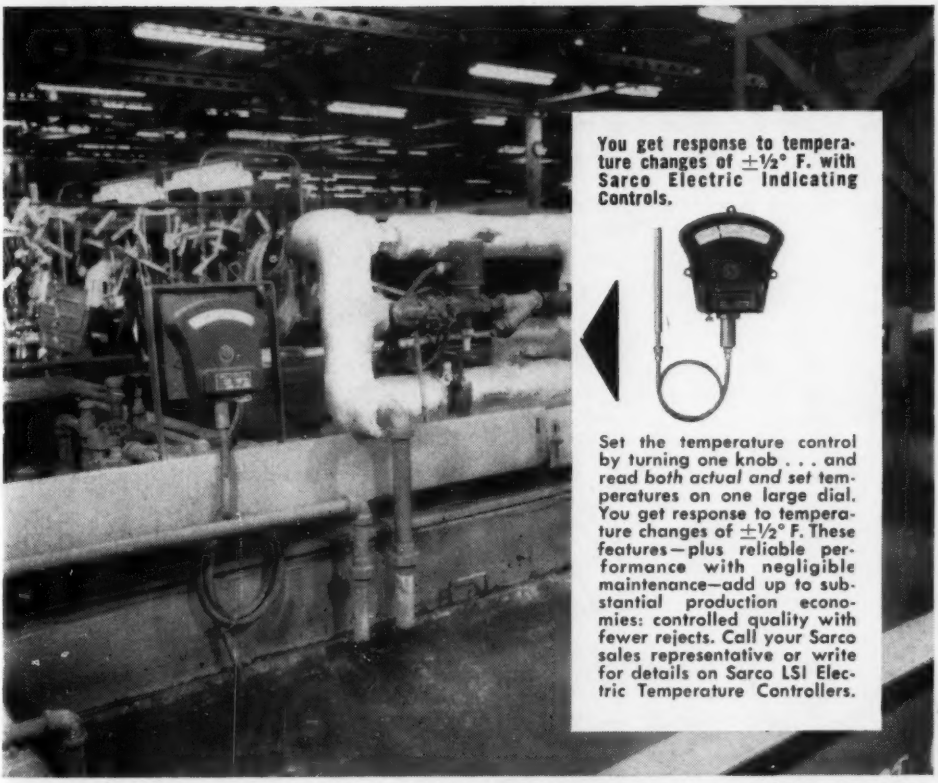
Write for Bulletin 157

YOUNG BROTHERS CO. 1830 Columbus Road Cleveland 13, Ohio

Over 60 years of service

ESTABLISHED YB Co 1896

For more data circle 374 on Postpaid Card


You get response to temperature changes of ±½° F. with Sarco Electric Indicating Controls.
Set the temperature control by turning one knob . . . and read *both actual and set* temperatures on one large dial. You get response to temperature changes of ±½° F. These features—plus reliable performance with negligible maintenance—add up to substantial production economies: controlled quality with fewer rejects. Call your Sarco sales representative or write for details on Sarco LSI Electric Temperature Controllers.

At the Stratford, Conn., plant of Sikorsky Aircraft Division of United Aircraft Corporation, the parts finishing department uses Sarco Electric Indicating Regulators to control the temperature of baths for cleaning, anodizing, etching and rinsing of precision helicopter parts.

How Sikorsky controls temperatures in 50 process tanks with Sarco Electric Indicating Regulators

Fifty process tanks are used for parts finishing at the Stratford, Conn., plant of Sikorsky Aircraft—and temperatures in each are controlled accurately and automatically with Sarco Electric Indicating Regulators. In bath temperatures which range from 95° F. to 210° F., Sikorsky easily holds the temperature to close tolerances for rinsing, etching, anodizing and caustic cleaning of precision helicopter parts. Sikorsky reports that maintenance of their Sarco Electric Indicating Regulators is practically zero. 9777F

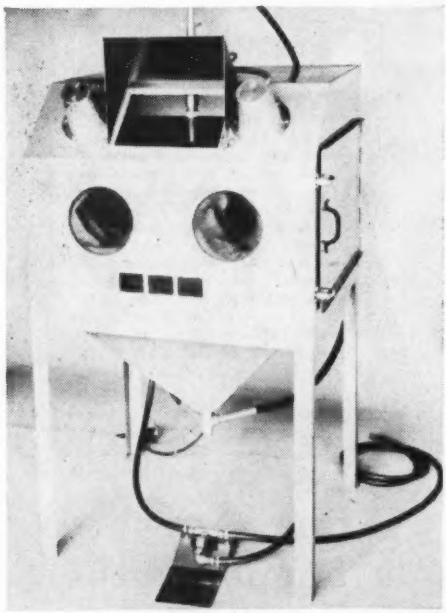
SARCO
COMPANY, INC.
635 Madison Ave., New York 22, N. Y.

For more data circle 375 on Postpaid Card

Sandblast Cabinet

This blasting cabinet has two independent ceramic-nozzle blast guns.

One gun is vertically mounted through the top of the cabinet, controlled by a foot-valve. This fixed gun allows the operator free use of both hands when holding objects to be



Cyclone Sandblast Cabinet: two nozzles

sandblasted. Height of this gun can be adjusted quickly.

The other gun is a flexible trigger-operated handgun that is useful for cleaning small articles, crevices, angles, and heavy objects.

Manufacturer: Cyclone Sandblast Equipment Co., 42 Clara St., San Francisco 7, Calif.

For more data circle **24** on Reader Service Card

★ ★ ★

Colored Chromates

Kenvert-O-Color is a process for coloring and improving corrosion resistance of many non-ferrous metals. By using combinations of various types of chromate coatings and dyes it is possible to produce colors ranging from clear pastels to deep blacks.

Zinc, cadmium, brass, copper, aluminum and silver may be treated by this process. Most important application for the process is for finishing zinc and zinc die castings, however.

A fact sheet available from the manufacturer of materials used in applying these colors gives complete data.

Manufacturer: Conversion Chemical Corporation, 99 E. Main St., Rockville, Connecticut.

For more data circle **25** on Reader Service Card

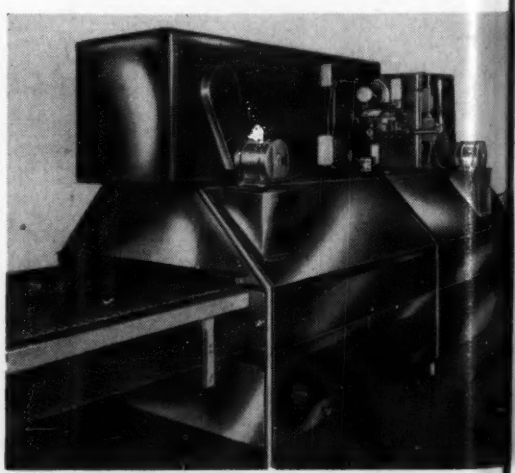
★ ★ ★

Screen Process Dryer

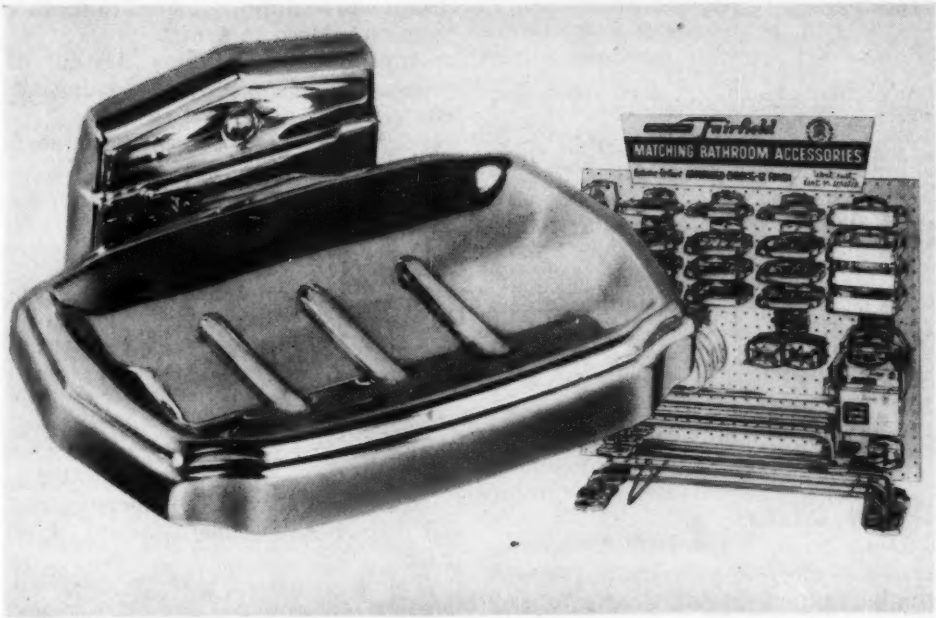
A conveyorized drying unit called the Auto-Jet Turbo Dryer will dry silk screen-printed products of any size, according to the manufacturer, Advance Process Supply Co.

The unit consists of one basic piece of equipment, the Auto-Jet Master, plus prefabricated extension components that make it possible to dry

(Continued)



Advance Auto-Jet Turbo Dryer: fast drying of multi-color silk screen printing, painted sheets, aluminum siding, other products



WHY EKCO CHOOSES MUTUAL CHROMIC ACID FOR ITS "ARMORIZED" CHROME FINISH

Ekco Products Company knows that quality chrome plating gives products permanent brilliance. That's why Ekco uses Mutual® Chromic Acid to plate their Autoyre line of bath, kitchen and closet accessories. Careful control, plating skill plus Mutual Chromic Acid help achieve Ekco's patented Armorized* Chrome-12*, a top quality chrome finish which sells merchandise.

Mutual Chromic Acid is always 99.75% pure—or better. Its low sulfate content (less than 0.1%) makes it easier for you to control the acid-sulfate ratio of your plating bath. This safeguards against plating difficulties—and expensive rejects!

To learn more about these and other advantages of Mutual Chromic Acid, send coupon for our free booklet, "Chromium Chemicals." Our Technical Service Staff will also be happy to answer your questions.

*Trade Marks owned by Ekco Products Company

OTHER PRODUCTS FOR PLATERS

SOLVAY® Ammonium Bicarbonate ■ SOLVAY Caustic Soda
SOLVAY Hydrogen Peroxide ■ SOLVAY Methylene Chloride

Allied Chemical

SOLVAY PROCESS DIVISION
61 Broadway, New York 6, N. Y.

MUTUAL chromium chemicals are available through dealers and SOLVAY branch offices located in major centers from coast to coast.

SOLVAY PROCESS DIVISION 26-89
ALLIED CHEMICAL CORPORATION
61 Broadway, New York 6, N. Y.

☐ Send Bulletin 52, "Chromium Chemicals"
☐ Have a representative phone for appointment

Name_____
Position_____
Company_____
Phone_____
Address_____
City_____ Zone_____ State_____

For more data circle 376 on Postpaid Card

multi-color printing at high speed and low temperature.

The unit is designed to handle stock of any thickness from paper to plywood. It is suitable for drying such products as painted aluminum siding, masonite, boxboard and so on.

A booklet containing complete details is available from the manufacturer of this dryer.

Manufacturer: Advance Process Supply Co., Inc., Equipment Div., 2315 W. Huron St., Chicago 12, Ill.

For more data circle **26** on Reader Service Card

★ ★ ★

Drum Lifter

Description: Type DLK Shoplifter is used to move 55-gallon drums around the plant and to lift drums to any height between floor level and 57 inches.

Lifting arms lower to the floor, slide under the drum easily. Once lifted, drums can be drained, moved to another location, placed in a rack.

Applications: Handling drums of paint, glue, chemicals, lubricating oil, cutting compounds and so on.

Manufacturer: Economy Engineering Co., 4507 W. Lake, Chicago, Ill.

For more data circle **27** on Reader Service Card

★ ★ ★

Belt-Driven Fans

A line of quiet-operating belt-driven fans recently introduced by Propellair, Div. of Robbins & Myers, Inc., is designed for use in areas where large volumes of air must be moved quietly.

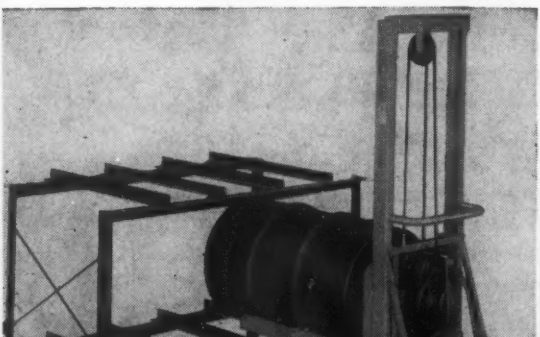
These fans are designed for wall mounting and for use in roof ventilators.

Sizes available: 42-72 inches, free-air deliveries of 14,200 c.f.m. to 58,100 c.f.m.

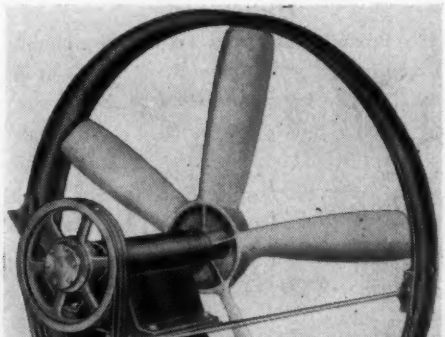
Totally enclosed motors used are completely protected against rust and corrosion.

Manufacturer: Propellair, Div. of Robbins & Myers, Springfield, Ohio.

For more data circle **28** on Reader Service Card



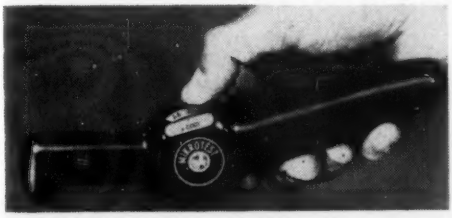
Type DLK Shoplifter: for moving and lifting 55-gallon drums of paint and chemicals



Propellair Belt-Driven Fan: quiet operation, useful in moving large volumes quickly

Magnetic Thickness Gage

Gage measures thickness of paint, lacquer, enamel and non-magnetic metal coatings on a steel base. It operates on the principle of measuring the



Mikrotest Gage: thickness with a "click"

attraction of a permanent magnet through a layer of non-magnetic materials on a steel base. With the Mikrotest gage, an inexperienced operator can quickly make accurate measurements.

The Mikrotest is placed on the coated surface and the dial rotated until a "click" is heard. Then the thicknesses of coating can be read directly from the dial. There are two models—one for paints, lacquers, enamels and so on, with a thickness range to 0.020 inch and another model for measuring galvanized coatings with a range to 0.002 inch.

Manufacturer: Nordson Corp., 88 Jackson St., Amherst, Ohio.

For more data circle **248** on Reader Service Card

★ ★ ★

Automatic Viscosity Control System

The Brookfield Viscosel keeps viscosity of coating materials constant by automatic addition of solvent. It is said to be especially useful in roller coating operations. The system continuously indicates viscosity and may be obtained with recording equipment where a permanent record is desired.

The Viscosel makes additions of solvent through a solenoid valve as the coating material thickens because of solvent evaporation or other causes.

This equipment can be cleaned easily for color change, will reproduce settings of previous runs, is free from calibration drift.

Manufacturer: Pneuma-Flo Systems, Inc., 141 W. 20th St., New York 11, New York.

For more data circle **249** on Reader Service Card

★ ★ ★

Machine for Inking Hand Rollers

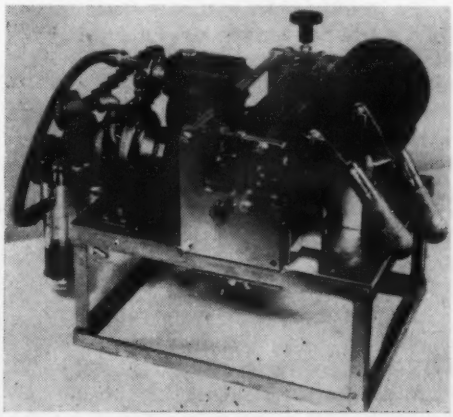
A portable machine recently introduced by Conforming Matrix Corporation automatically spreads a uniform coating of ink on rollers used for hand roller coating.

The unit is designed to eliminate time-consuming hand inking of rollers (done by rolling out ink on a glass plate).

The small air-operated unit requires 6 c.f.m. of compressed air. Speed reducer accurately controls pick-up and distributing rollers to accommodate various coating materials.

Manufacturer: Conforming Matrix Corporation, 356 Toledo Factories Bldg., Toledo 2, Ohio.

For more data circle **250** on Reader Service Card



Portable machine for inking hand roller coaters is inking two sizes of hand rollers.

Custom-Made Gloves

Workers with hands of unusual size or shape can obtain gloves that fit perfectly by utilizing Pioneer Rubber Company's custom-order service.

Pioneer Special Mold and Custom-Made Glove

By making an outline drawing of the worker's hands or by making a plaster of paris cast, Pioneer is able to make a special glove mold for the worker with hands that cannot be fit with standard sizes. This mold is then kept on file for future use in making gloves for the worker.

Manufacturer: Pioneer Rubber Co., Inc., 285 Tiffin Rd., Willard, Ohio.

For more data circle **29** on Reader Service Card

★ ★ ★

Drum Warmer

A device for heating or cooling 55-gallon drums is being marketed by the Platecoil Div., Tranter Manufacturing Inc., Lansing, Mich.

The drum warmer consists of a "Platecoil" with clamp to permit change from one drum to another or changing the location on an individual drum.

The unit's flexible connections can be connected to steam lines, hot or cold water or other refrigeration or heating sources to add or withdraw heat from

Tranter Platecoil Drum Warmer: heats contents

the contents of the barrel or drum.

Manufacturer: Platecoil Div., Tranter Manufacturing, Inc., 735 E. Hazel St., Lansing 9, Mich.

For more data circle **30** on Reader Service Card

★ ★ ★

Electrocleaners

A line of electrocleaners recently announced by Detrex Chemical Industries, Inc. is formulated to produce solutions with excellent conductivity and cleaning power at lower concentrations.

Properties: Excellent detergency and wetting properties; high alkalinity produces maximum saponification when not preceded by other cleaning methods; improved soil-carrying char-

(Continued)

acteristics; improved solution stability; limited, fast-breaking foam.

Detrex especially recommends the new cleaners for use in batch-type plating shop operations.

Manufacturer: Detrex Chemical Industries, Inc., Box 501, Detroit 32, Michigan.

For more data circle **31** on Reader Service Card

★ ★ ★

Vibratory Finishing Machine

A vibratory finishing machine (Model VT-75 Vibrasheen) for use in deburring, descaling, cleaning, burnishing and surface refinement of metal parts has been introduced by Almco, Queen Products Division of King-Seeley Corporation.

The machine vibrates a five-cubic-foot load of parts and media.

This method of finishing is particularly suitable for finer finishing of delicate parts, for heavy burr removal, and for finishing parts having hard-to-reach crevices or internal burrs, the manufacturer reports. Larger parts may be finished by fixturing them to

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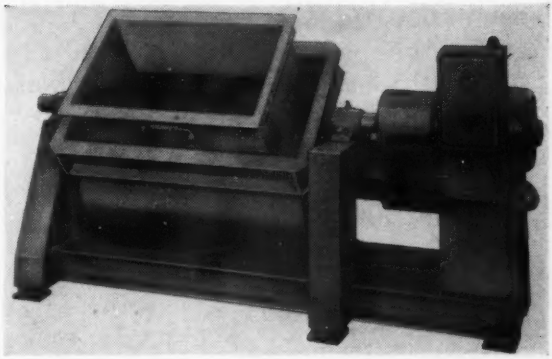

Almco VT-75 Vibratory Finishing Machine

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the container or to the framework.

Manufacturer: Almco, Queen Products Div. of King-Seeley Corp., Albert Lea, Minn.

For more data circle **32** on Reader Service Card

★ ★ ★

Water-Purification Equipment

Barnstead water-purification equipment connected in series produces 18,000,000-ohm water in production quantities free of bacteria, organics, silica and submicroscopic particles.

Equipment consists of sand and carbon filter for preliminary treatment of raw water; a four-bed, extra-capacity Barnstead Demineralizer for removal of most ionizable impurities; two Barnstead high-purity Stills for removing remaining non-ionizable, suspended, and gaseous impurities; box-type tin-lined tank for intermediate storage; mixed-bed demineralizer for removal of final traces of ionizable impurities; submicron filter for removing submicroscopic particles down to 0.45 micron; and tin-lined heater for final heating of water to temperature desired.

The maker says that this is the first time that equipment for the production of water with such high purity and in such quantities has been offered as standard.

Manufacturer: Barnstead Still and Sterilizer Co., 12 Lanesville Terrace, Boston 31, Mass.

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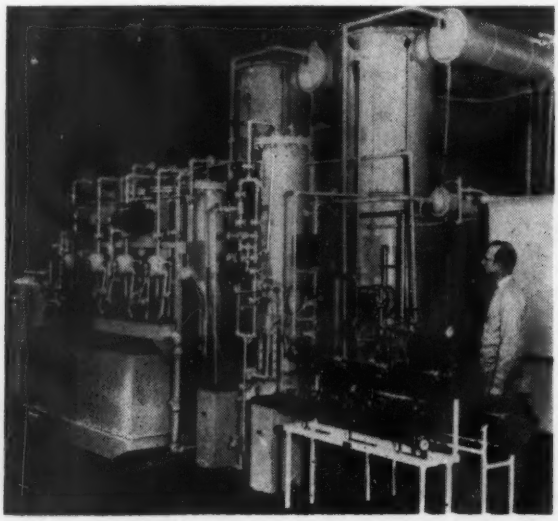


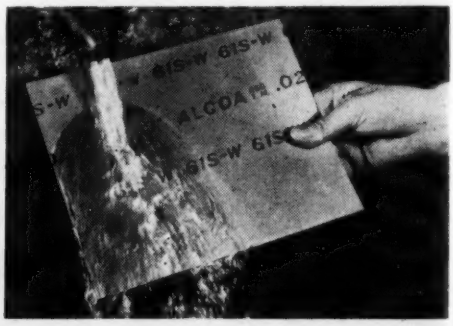
Barnstead Water-Purification Equipment

★ ★ ★

Temporary Scratch Preventive

Temporary protection of polished surfaces—metals, glass, plastics, and so on is provided by an abrasion-resistant coating, Zincilate WST-100, which can be removed easily with a simple warm rinse.

The coating is non-flammable, will withstand mild forming and shaping, and resists petroleum solvents. It is a non-reactive, inorganic type of coating that air-dries to full hardness (80C Rockwell) in 30 minutes. Drying time can be reduced through the use of warm air circulation or infrared baking.



Zincilate WST-100, a temporary protective coating for polished surfaces, is removed from an aluminum panel with warm water.

Zincilate WST-100 requires no mixing, may be applied by spray, dip,

(Continued)

roller coat, flow coat or pressure curtain methods. No special surface preparation other than an ordinary solvent wipe is needed.

Manufacturer: Industrial Metal Protectives, Inc., 401 Homestead Ave., Dayton 8, Ohio.

For more data circle **34** on Reader Service Card

★ ★ ★

Steel Electrocleaner

Enbond Cleaner FE-84, a heavy duty, high conductivity, anodic cleaner for steel, has been introduced by Enthone, Inc. The product is designed for high current density, anodic cleaning of steel without danger of pitting or rusting of the work in the areas of highest current density. It rapidly removes smut, oil and solid dirt and produces a clean, water-break free surface, the manufacturer states.

Enbond Cleaner FE-84 is recommended for use at concentrations of 8 to 12 oz./gal. and solution temperatures of 180 to 200 deg. F. Current densities of up to 100 a.s.f. can be attained at average operating voltages to promote rapid cleaning and smut removal. The cleaning solution has very high tolerances to dragged-in buffing compound.

For activation of the metal surface after cleaning in Enbond Cleaner FE-84, Enbond Activator 73 or Enth-Acid 82 should be employed. The combination of compatible cleaner and activator will eliminate cloudy or stained electrodeposits.

Manufacturer: Enthone, Inc., sub. of ASARCO, New Haven 11, Conn.

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Weighing only 4 pounds . . . yet so powerful you can't stall it by standing on it . . . this Air Driven, Orbital Action Sander gives a perfect finish, quickly and easily.

NATIONAL N D DETROIT

See how "Mity-Midget" can save you time and money. Write for a complete catalog today.

NATIONAL-DETROIT, INC., ROCKFORD, ILLINOIS

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Mobile Industrial Ultrasonic Cleaner

A mobile ultrasonic cleaning system is now being manufactured by Acoustica Associates, Inc. The unit moves on wheels from one location to another, can be used wherever electricity is available.

Cleaning tanks up to 75 gallons capacity and ultrasonic power generators in ratings up to 2500 watts can be provided. Power may be derived from a 115-volt or 220-volt a.c. outlet.

Manufacturer: Acoustica Associates, Inc., Fairchild Ct., Plainview, N. Y.

For more data circle **36** on Reader Service Card

★ ★ ★

Nylon-Fiber-Abrasive Polishing Material

Abrasive wheels and rolls of nonwoven nylon fiber with abrasive grain dispersed throughout appear to offer great promise in finishing and polishing, according to Behr-Manning Co., developer of the product.

The "Bear" wheels seem best suited for such operations as cleaning, the development of decorative straight-line or swirl patterns, and the imposition of matte finishes.

They are not designed for stock removal or even for normal grinding or deburring, although their action may be varied by changing the type and size of grit, modifying the resins used, altering the density of the wheel itself, varying the rate and extent of oscillation or changing pressures and speeds. At their most aggressive, the wheels and rolls remain the gentlest of power-driven abrasives.

They are made in a grit range from 100 to 600. Various abrasives have been employed in early production, although most testing has been done with silicon carbide.

Advantages apparent thus far include cool operation, which prevents warping of metals or blistering of foil-clad plastic panels; long life; ease of redressing; and light weight.

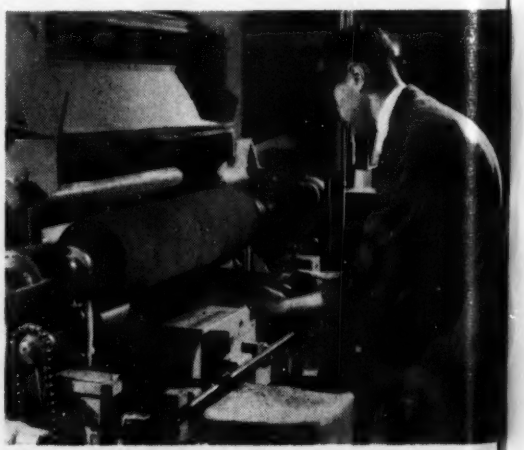
Engineering tests indicate that the wheels should be run at relatively low speeds — approximately 2600 s.f.p.m. Pressures should be light in order to avoid heating, and the wheels should be oscillated to produce the most consistent overall pattern.

Typical areas where the wheels are performing successfully include polishing stainless steel sheet, blending stainless steel welds (after the weld beads have been ground off with a belt), cleaning aluminum panels before anodizing, and producing satin finishes on flat sheets of metal.

Other suggested uses are cleaning copper oxides off the foil on printed circuit panels, blending leaded areas in automobile body work, removing silicon mold release agents from rubber sheeting, and cleaning up paint runs on steel furniture. Others include dulling the gloss on decorative plastic sheets, producing sunburst patterns on kitchen utensils, removing oxides from titanium, polishing zinc-coated steel.

Manufacturer: Behr-Manning Product Engineering Department, Troy, New York.

For more data circle **37** on Reader Service Card



Bear Wheel: gentlest power-driven abrasive

Your Name_____ Your Title_____

Company Name_____

Company Address_____

City_____ Zone_____ State_____

Products Manufactured_____ Number of Plant Employees_____

August 1959

products finishing

Circle KEY numbers (NOT PAGE NUMBERS) for more information on items described or advertised in this issue.

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FREE LITERATURE

40. Automated Deburring Machines
A 10-page booklet on Acme deburring machines gives basic information on deburring, deburring tools; shows typical setups for deburring spline shafts, jet engine blades, motor rotors, plastic cups, molded rubber parts, chain sprockets, die-cast bodies, motor stators, washers and bushings, trim moldings, tubular parts, stamped disks, stampings, other products. Acme Manufacturing Co., 1400 E. Nine Mile Rd., Detroit 20 (Ferndale), Mich.

41. Cold Stripper
Technical data sheets describe Electro Cold Strippers, a line of non-flammable liquid removers. Will strip air-dry or high-bake synthetic coatings, alkyds, epoxies, vinyls, phenolics. Used also in specialty fields for removing Kodak Photo Resist coatings, vacuum plated coatings, also in conjunction with ultrasonic cleaning installations. Supplied in liquid form for dipping operations or in viscous form for brush application or flow on. Allied Finishing Specialties Co., 2643 W. Grand Ave., Chicago 12, Ill.

42. Portable Tumbling Machine
Data sheet describes and illustrates Almco Super Mite Model DBM-10, a small barrel finishing machine that is useful for laboratories, job shops, research departments and manufacturers with limited finishing requirements. Almco, Queen Products Div., King-Seeley Corp., 86 E. Main St., Albert Lea, Minnesota.

43. Environmental Test Chambers
A 12-page catalog covers a line of environmental test chambers. American Research Corporation, Farmington, Connecticut.

44. Ultrasonic Parts-Cleaning Equipment
A four-page folder shows large Blakeslee ultrasonic degreasers and washers. G. S. Blakeslee & Co., 1844 S. Laramie Ave., Chicago 50, Ill.

45. Pre-Cut Protective Masks
Bulletin No. 160-C describes and illustrates Brady self-sticking pre-cut protective masks, tells how to reduce masking costs. W. H. Brady Co., 746 W. Glendale Ave., Milwaukee 9, Wisconsin.

46. Chromate Coatings
Fact sheet No. F-2 tells how to select the proper chromate sealing and brightening finishes for non-ferrous metals. Conversion Chemical Corporation, 99 E. Main St., Rockville, Conn.

47. Hot-Spray Equipment
A four-page folder tells how paint heaters can be used to save material, improve painting speed, improve film build, reduce reject rates, reduce overspray, produce smoother finishes. The DeVilbiss Co., Toledo 1, Ohio.

48. Degreasing Solvents
Literature on perchloroethylene and tri-chlorothene, both of which are used for vapor degreasing. Dow Chemical Co., Midland, Mich.

49. Impact Tester
Folder describes features of Gardner "Coverall" Mandrel Impact Tester, which measures flexibility and impact resistance of organic and inorganic coatings applied to light-gauge metal. Gardner Laboratory, Inc., P.O. Box 5728-PF, Bethesda 14, Md.

50. High-Temperature Ovens
Data sheet shows several models of thermostatically controlled high-temperature ovens that are suitable for such operations as stress relief of springs and plated parts. Grieve-Hendry Co., Inc., 1401 W. Carroll Ave., Chicago 7, Ill.

51. Liquid-Seal Air-Spray Process
An eight-page booklet gives complete information on the liquid-seal air-spray process of painting. This is an air-spray process that is said to utilize 99 per cent of all paint material fed into the system. This folder tells how the process works, what it will do, what equipment is required. The Gyromat Corporation, Kings Highway Cut-Off, Fairfield, Conn.

52. Bright Nickel Plating Process
Folder enumerates the advantages of the improved Harshaw Nubrite bright nickel plating process. The Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio.

53. Finishing Fasteners, Small Parts
A system for producing corrosion-resistant organic finishes on fasteners and small parts is reported in a technical bulletin entitled "A Two-Phase System for Producing Corrosion Resistant Coatings Using Bulk Handling Methods." International Rustproof Corporation, 1061 E. 260th St., Cleveland 32, Ohio.

54. Chemical Deburring Solution for Zinc Die Castings
A chemical deburring solution for Zamak 3 die castings that cuts immersion time, speeds bulk handling and effectively removes burrs raised by drilling or other machining operations is reported in Data Sheet No. 91. MacDermid, Inc., Waterbury 20, Conn.

Circle numbers on postpaid card opposite page 128 to obtain free literature

55. Bright Cyanide Copper
Advantageous features of M & T Bright Cyanide Copper are reported in a data sheet. Metal & Thermit Corporation, Rahway, N. J.

56. Surface-Preparation Machinery
Folder describes and illustrates Pennsalt Machines for metal surface preparation. Metal Processing Department, Pennsalt Chemicals Corporation, 3 Penn Center, Philadelphia 2, Pa.

57. Wet-Blasting Equipment
Description of two-speed wet-blasting equipment in stainless steel cabinet. Two-speed equipment incorporates components necessary to force abrasive-water mixture through the blast gun under pressure to produce a speed double that of the muzzle velocity of the mixture at normal speed. This improves rate of processing and makes it possible to do difficult finishing and burr-removal jobs. Pressure Blast Manufacturing Co., Inc., 27 Pleasant St., Manchester, Conn.

58. Precision Mechanical Finishing
A 30-page catalog on precision mechanical finishing and automatic finishing processes outlines in detail the various types of finishing and abrading processes such as grinding, deburring, descaling and polishing. Illustrations and detailed descriptions of conventional models, Roto-Matic automatic finishing machine, and newly developed Vibratron, which employs a vibratory abrasive action. Section devoted to abrasive chips and compounds points out factors involved in holding to precision dimensional tolerances. Roto-Finish Co., 3704 Milham Rd., Kalamazoo, Mich.

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For more data circle 381 on Postpaid Card

59. Self-Cleaning Pipeline Strainers
Bulletin No. 1210-B describes and illustrates Type AT self-cleaning pipeline strainers for protecting steam traps, pumps, control valves and compressors from dirt, scale and metal chips in pipe lines. Sarco Co., Inc., 635 Madison Ave., New York 22, N. Y.

60. Gold Plate
Technical data on the Temperex Process, an acid-type electroplating formulation that produces pure 24-karat gold deposits to any desired practical thickness. Adaptable to both still and barrel plating. Bulletin 175B. Sel-Rex Corporation, Nutley 10, N. J.

61. Plating Barrel
Technical Bulletin No. P-133 describes advantageous features of the Stevens Poly-Carb barrel. Frederic B. Stevens, Inc., 1800 Eighteenth St., Detroit 16, Michigan.

62. Temporary Protective Film
Bulletin No. 67, on Fabrifilm, an easily removable protective coating that protects surfaces from abrasion, scuffing and corrosion during in-plant processing. This temporary film comes off during normal alkaline cleaning or steam cleaning operations that precede finishing. Turco Products, Inc., 24600 S. Main St., Wilmington, Calif.

63. Vinyl-Metal Laminates
Col-O-Vin/Metal laminate is a semi-rigid vinyl sheet bonded to steel or other non-ferrous metals. It can be formed and machined without harm to the finish, is now being used for making such products as luggage, auto parts, doors, typewriters, cabinets. Brochure gives complete information. Columbus Coated Fabrics Corporation, Columbus 16, Ohio.

64. Barrel Nickel
Technical information, process details, equipment required, trouble-shooting tips for Sey-Lite bright nickel used in barrel nickel plating. Seymour Manufacturing Co., Seymour, Conn.

65. Rectifiers for Plating
Bulletin 100 describes features of Djeco selenium, germanium and silicon rectifiers. Djeco Div., Djordjevic Engineering Co., 1933 N. Damen, Chicago 47, Ill.

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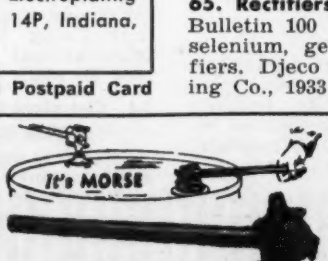

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66. Wet Blaster
Data sheet on the Tobin-Arp Liqui-Breez wet blaster, Model LB-1002. This unit is useful in honing, deburring, blending, cleaning. Tobin-Arp Manufacturing Co., 6400 Penn Ave., South, Minneapolis 23, Minnesota.

67. Conveyors
A 16-page catalog describes two types of conveyors made by the Conveyor Division of The American MonoRail Company. Case histories show how savings are effected by American "Cable-Way" conveyors, a conventional trolley system pulled by a continuous cable, driven by powered sprocket-wheels. The American "Chainless" conveyor has eight-wheeled trolleys which are connected by steel rods terminating in ball and socket joints. It has no sprocket wheels or chain, and uses an in-line caterpillar drive unit. Conveyor Division, The American MonoRail Co., Fourth and Franklin Sts., Tipp City, Ohio.

68. Acidic Strippers
Long life and easy control are two of the advantages offered by a pair of non-fuming, strongly acidic strip solutions described in Technical Data Sheet No. 20. Called Metex DB and XB Acid Electrolytic Strips, DB will strip chromium, nickel, copper or bronze plate from zinc-base die castings, brass and aluminum. In cases where zinc-base die castings only are to be stripped, XB will remove copper, nickel and chromium-plated coatings. MacDermid Inc., Waterbury 20, Conn.

69. Heat-Resistant Finish
Sicon, a finish that withstands high temperatures, said to be heat stable (up to 1,000 deg. F.), is fully described in a brochure. The brochure presents a complete table of properties, characteristics and application data. It describes Sicon as a finish that is highly resistant to moisture, oxidation and ultra-violet radiation. Midland Industrial Finishes Co., Waukegan, Ill.

70. Coated Abrasives
Information on the company's line of coated abrasive products: belts, rolls, sheets, discs, specialties. Abrasive Products, Inc., South Braintree 85, Mass.

71. Plating Brighteners
Data file on the company's line of "chemically different" plating brighteners. Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Maryland.

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72. Conversion Coating for Aluminum
Bulletin 1424-A describes complete line of protective and prepaint treatments for aluminum. Discusses advantages, applications, equipment needed. Lists types of products treated and includes convenient selection chart. Amchem Products, Inc., Ambler 29, Pa.

73. Tank Lining
Literature describes advantageous features of Amercoat PVC tank lining. Amercoat Corp., Dept. ED, 4809 Firestone Blvd., South Gate, Calif.

74. Electronic Painting System
Bulletin contains complete technical information on a system for spraying paint by using conventional automatic spray gun and ionizing electrodes to charge the paint as it leaves the guns. Products to be painted are grounded, thus they attract the charged paint particles. Ashdee Electrostatic Div., Industrial Electronics Inc., 10 Third Ave., Joliet, Ill.

75. Reduce Plating Waste
Catalog 127-A illustrates a complete line of water demineralizers, presents information that can help to reduce waste and save money. Barnstead Still & Sterilizer Co., 12 Lanesville Terrace, Boston 31, Mass.

76. Belt Finishing Materials
Selection of offhand belt finishing materials is simplified by means of a wall chart that lists proper abrasives, grit size and type, belt speed, lubricant and contact wheel for 16 of the most popular metals and alloys. Behr-Manning Co., Dept. PF-2, Troy, N. Y.

77. Masking Aids
"Time-Saving Masking Aids for Better Product Finishing" is the title of an illustrated brochure that describes masking discs, plugs, caps, corks, tape. Includes information on tape dispensers. By-Buk Co., 4314 W. Pico Blvd., Los Angeles 19, Calif.

78. Corrosion-Proof Lining
Technical bulletin on Coroline, a thermosetting lining that can be trowelled on to protect chemical storage tanks, pickling and plating tanks, processing tanks, pits and foundations from acids and chemicals. The Ceilcote Co., Inc., 4848 Ridge Rd., Cleveland 9, Ohio.

79. Cleaning and Finishing Machinery
A two-page bulletin describes machines, systems and processes for cleaning and finishing metal products. Cincinnati Cleaning & Finishing Machinery Co., 2008 Hageman St., Cincinnati 41, Ohio.

80. Water-White Lacquer
Information on Daconite 5600 clear lacquer, a ready-to-spray lacquer that is said to have excellent paleness and color retention. James B. Day & Co., 1872 Clybourn Ave., Chicago 14, Ill.

81. Spray Nozzles
Catalog No. 33-A is designed to help the user select the proper type of spray nozzle for a particular application. Complete data on each type of nozzle, including photo, construction details, capacity, recommended uses, spray characteristics, materials available. Delavan Mfg. Co., Grand Ave. and Fourth St., West Des Moines, Iowa.

82. Electrolytic Cleaners
Information on new electrolytic cleaners that assure absolute removal of buffing and polishing compounds and all other intentional soils. Detrex Chemical Industries, Inc., Box 501, Dept. PF-659, Detroit 32, Mich.

83. Chromium Plating Additive
Information on Diamond CPA 1800, an additive for chromium plating baths which improves throwing power of the solution and metallurgical characteristics of the plate. Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, Ohio.

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McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.
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84. Water Wash Spray Booth Compound
Information on Diff. LX Klarifiant, a spray booth compound that is said to prevent clogged nozzles, booth rusting, foam, and curtain "build-up." DuBois Co., Inc., 1120 W. Front St., Cincinnati 3, Ohio.

85. Ready-Mixed Gold
Information on Sea-Lac ready-mixed gold finishes for application by spray or dip. Duralac Chemical Corp., 84 Lister Ave., Newark, N. J.

86. Copper-Brass Treatment
Ebonol "C" improves adhesion of almost every type of coating applied to copper or brass surfaces. It forms thousands of black oxide needles on the surface of the metal, which aid in bonding the paint or other coating to the surface. Also improves corrosion resistance. Complete details available from the manufacturer. Enthone, Inc., 442 Elm St., New Haven 11, Conn.

87. Copper Anode
Information on the new Asarco-Max copper anode. Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.

88. Sisal Buffs
Descriptive literature on Zippo Sisal Buffs, which are said to be excellent as dual-purpose (polishing and buffing) wheels. Formax Mfg. Corp., Detroit 7, Mich.

89. Belt Grinder
Bulletin 336-T describes and illustrates Model UBG-50 universal belt grinder, a machine with two heads—one for internal and flexible-belt grinding, one for contact wheel, flexible-belt, platen and contour-wheel grinding. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

90. Refrigerated Degreaser
Folder on the Erie Degreaser, which has a refrigeration unit that automatically controls solvent vapor level regardless of outside atmospheric conditions. Erie Degreaser Co., Division of Erie Engine & Mfg. Co., Erie, Pa.

91. Face Mask
Information on the Flex-A-Prene face mask, which protects the wearer against paint pigments and solvent fumes. Flexo Products, Inc., 24864 Detroit Rd., Westlake, Ohio.

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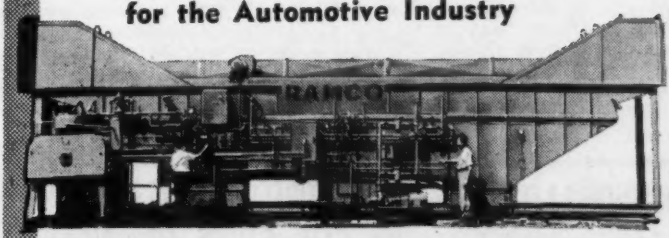

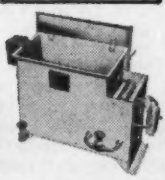

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92. Clear Semi-Gloss Lacquer
Information on Agateen No. 2B semi-gloss lacquer. Agate Lacquer Mfg. Co., Inc., 11-13 43rd Rd., Long Island City, New York.

93. Tack Cloth
Literature on treated cloths that pick up dust and lint prior to paint finishing. Bond Chemical Products Co., 2639 N. Clybourn Ave., Chicago 14, Ill.

94. Rhodium Plating Instructions
Handy pocket-sized booklet gives complete instructions for rhodium plating, includes data on solution preparation, work preparation, temperatures and current densities, tanks, anodes, and so on. Sigmund Cohn Mfg. Co., Inc., 121 S. Columbus Ave., Mount Vernon, N. Y.

95. Aluminum Etchant
Technical data sheet on Cowles AK tells how this formulation works on all aluminum alloys, prevents build-up of scale by means of a special sequestering agent. Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

96. Bronze Powders
Color card shows 33 colors of bronze-like finishes that can be produced from stock Cres-Lite bronze powders. Crescent Bronze Powder Co., 118 W. Illinois St., Chicago 10, Ill.

97. Metallizing Material
Staples made of extremely pure aluminum and prepared for use in vacuum metallizing are described in literature available from D & W Tool & Findings, Inc., 52 Salem St., Providence 7, R. I.

98. Titanium Anodizing Cylinder
Data sheet describes and illustrates an all-titanium anodizing cylinder that is useful in bulk processing of bolts, rivets, screws. Requires no stripping, resists acids. Detroit Industrial Process Co., 9301 French Rd., Detroit 13, Mich.

99. Stripper
Folder describes No. 153 Stripper, a non-flammable volatile solvent-type stripper with very little toxicity. Has excellent penetrating properties, is said to be useful in removing coatings that are difficult to remove, such as melamines, epoxies, vinyls, plating rack coatings. Dytex Chemical Co., 140 India St., Providence 3, R. I.

100. Tumbling Media
Information on preformed tumbling media and abrasive products. Over 200 sizes and bonds available. Fortune Industries, Inc., 11770 Dexter Rd., Chelsea, Mich.

101. Roller Coating Equipment
Information on Gasway equipment for roller coat finishing. Gasway Corporation, 6463 N. Ravenswood Ave., Chicago 26, Illinois.

102. Plating Course
Information on a correspondence course in electroplating. Joseph B. Kushner Electroplating School, P. O. Box 2066P, Station "D," Evansville 14, Indiana.

103. Baking and Drying Equipment
Catalog No. 560 describes and illustrates various types of baking and drying equipment. The Lanly Co., Cleveland, Ohio.

104. Drum-Handling Tools
Literature on a line of drum-handling tools and equipment: drum upenders, drum wrenches, carts and so on. Morse Mfg. Co., Inc., 762 W. Manlius St., E. Syracuse, N. Y.

105. Electrostatic Hand Gun
A 4-page folder tells how the new Ransburg hand-held electrostatic spray gun works, what it will do. Includes photos and diagrams of the new gun. Ransburg Electro-Coating Corp., P. O. Box 23122, Indianapolis 23, Indiana.

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106. Coatings for Steel
Information on the company's line of organic coatings for steel. These products are said to offer greater resistance to temperature, excellent color control, greater tensile strength. Reynolds Chemical Products Co., Whitmore Lake, Mich.

107. Chromium Chemicals
Bulletin 52 contains technical information on chromic acid and other products. Solvay Process Div., Allied Chemical Corp., 61 Broadway, New York 6, N. Y.

108. Etch Primer
Data on Gripalloy, an etch primer available in black and colors. Used as primer or finish coat. Tenax, Newark 5, N. J.

109. Cob Grit for Blasting, Tumbling
Information on corn cob grits that are used as tumbling media and in blast cleaning. Ti-Co Industries, Inc., P. O. Box 185, Tipton, Indiana.

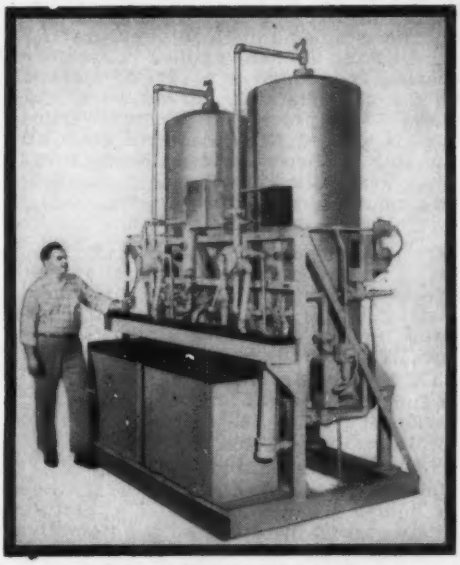
110. Brass Plating Solution
Technical bulletin on True Brite brass solution, which is available in a variety of colors. True Brite Chemical Products Co., Box 31, Oakville, Conn.

111. Copper Anodes
Information on "Phosphor-Brite" rolled copper anodes for acid copper plating baths. Univertical Corp., 14841 Meyers Rd., Detroit 27, Mich.

112. Corrosion-Resistant Coatings
Booklet entitled "What Every Maintenance Man Should Know About Urethane Coatings" describes characteristics of these plastic coatings: resistance to corrosive chemicals and fumes; resistance to abrasion, heat, sunlight, weather. Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J.

113. Die Cast and Aluminum Cleaners
Technical data on Benchmark die cast and aluminum cleaners, completely soluble, odorless, non-toxic, non-flammable chemicals which are said to remove buffing compounds and other soils in a minimum time. Benchmark, Inc., 1060 Arch St., Wyandotte, Mich.

114. Filtration for the Plating Industry
Bulletin EP-100. 15 pages. Photos of and information on typical installations; construction details for various solution filters; operating cycles; information on recovery systems. Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Illinois.



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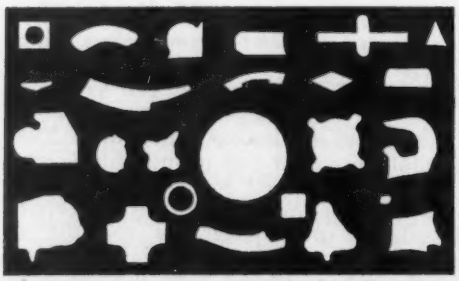
115. Pressure Curtain Coater
Data File SIF-7 contains complete data on the Steinemann-Koch pressure curtain coater, which applies a uniform coating of lacquer or synthetic material on flat or moderately curved work. Patented Swiss process in which a vertical film is poured onto the work from adjustable orifices. George Koch Sons, Inc., Evansville 4, Indiana.

116. Multiple-Process-Cycle Plating Machine
Information on the Select-O-Matic automatic plating machine, which allows the operator to select any one of several plating cycles when he loads the machine, merely by turning a dial. Lasalco, Inc., 2820 LaSalle St., St. Louis 4, Mo.

117. Leather-Grain Finish
A finish that bakes to a tough, abrasion-resistant leather-like texture. The Lowe Brothers Co., Dayton 2, Ohio.

118. Complete Finishing Systems
Bulletin A-659 tells about the advantages of complete finishing systems, pictures many custom installations in automotive, appliance and other industrial plants. An efficient finishing system, the bulletin states, must be more than a series of cleaning, drying, painting and baking units. It must be coordinated to produce the desired results at the lowest possible cost. R. C. Mahon Co., Detroit 34, Mich.



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119. Glass Shot
Information on Microbeads Glas-Shot, microscopic glass beads for use in wet and dry blasting equipment for cleaning, polishing, peening and finishing. Microbeads, Inc., P.O. Box 241, Jackson, Mississippi.

120. Nylon Web Finishing Material
Information on "Scotch-Brite" finishing material, which is made by impregnating a tough nylon web with microscopic working particles. Scotch-Brite sections can be mounted on lathes, used on conveyorized machines, mounted on flexible shaft, or used as a pad, for hand work. The manufacturer recommends this product for use in metal blending, cleaning, finishing, and for correction of surface imperfections. Gives a consistent finish from beginning to end of a run. Minnesota Mining and Manufacturing Co., Dept. FH-59, 900 Bush Ave., St. Paul 6, Minnesota.

121. Textured Vinyl Coatings
Information on warm-to-the-touch textured vinyl coatings that heat cure at moderate temperatures. Organic Chemicals Div., Monsanto Chemical Co., Dept. SP-2, St. Louis 66, Mo.

122. Orbital Sander
Catalog describes and illustrates the Mity-Midget, an orbital sander that weighs only four pounds, yet cannot be stalled even by standing on it. National-Detroit, Inc., Rockford, Ill.

123. Clear Protection
Information on 2105 Clear Lacquer for the protection of brass, silver, bronze and copper. G. J. Nikolas & Co., Inc., 2880 Washington Blvd., Bellwood, Ill.

124. Room-Temperature Cleaner
Savings made possible by cleaning metals with Oakite Room-Temp Cleaner are described in a folder that tells about a new cleaning compound that can be used in the 80-100 deg. F. temperature range. Folder F10596. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

125. Automatic Polishing
Information on automatic polishing and buffing machines. Packer Machine Co., Meriden, Conn.

126. Black Oxide
Bulletin H-16 tells how to produce a rust-resistant black finish that is also an excellent base for topcoats of lacquer or enamel. Park Chemical Co., 8074 Military Ave., Detroit 4, Mich.

127. Copper and Nickel Sulfate
Information on Triangle Brand copper and nickel sulfates, for use as sources of copper and nickel in plating. Phelps Dodge Refining Corp., 300 Park Ave., New York 22, N. Y.

128. Two- and Three-Stage Degreasers
Bulletin No. 655 describes two- and three-stage solvent degreasers, how they work, where they are applicable. Ramco Equipment Corp., 811 Edgewater Rd., New York 59, N. Y.

129. Paint Arrestors
Information on RP paint arrestors, dry-type filters for removing paint solids from spray booth exhaust air. Research Products Corp., Dept. 38, Madison, Wis.

130. Filter Pump Units
Bulletin 103 contains complete data on Sethco filter pumps for removing solids from acid and alkaline solutions. Sethco Mfg. Co., 2292 Babylon Turnpike, Merrick, L. I., N. Y.

131. Soak Cleaner
Information on a controlled-pH, high-detergency soak cleaner for applications where space is limited for precleaning. Solventol Chemical Products, Inc., 15841 Second Blvd., Detroit 3, Mich.

132. Spray Nozzle Catalog
Catalog No. 24 is a 48-page booklet containing complete data on various spray nozzles and accessories. Nozzles are listed in tabular form and complete information is given on pipe sizes, external dimensions, orifice diameters, capacities and spray angles. Spraying Systems Co., 3229 Randolph St., Bellwood, Ill.

133. Glove-Selection Guide
Handy pocket folder offers a comprehensive guide to selecting the correct glove for a particular industrial application. Includes detailed chemical-performance ratings, outlining tests made with various reagents and solvents. Pioneer Rubber Co., Inc., 285 Tiffin Rd., Willard, Ohio.

134. Zinc Plating Additive
Data on Zinc Brite, a cleansing and purifying agent for cyanide zinc plating solutions. Sulphur Products Co., Inc., 621 W. Pittsburgh St., Greensburg, Pa.

135. Air Sanders
Data on portable air-operated sanding machines. Pneumatic Products Div. of Sundstrand Corp., 2531 Eleventh St., Rockford, Ill.

136. Vacuum Metallizing Coils
New catalog lists 164 sizes and shapes of vacuum metallizing coils, tells about typical applications for each of them. Sylvania Electric Products, Inc., Chemical & Metallurgical Div., Towanda, Pa.

137. Baking and Drying Ovens
Bulletin 157 describes line of batch and conveyor-type baking ovens for heating up to 1,000 deg. F. Young Brothers Co., 1830 Columbus Rd., Cleveland 13, Ohio.

138. Vinyl-Metal Adhesive
Data sheet No. 503 describes Stanley adhesive No. 69X-1487 for laminating vinyl to metals, tells how to prepare the surface, use the adhesive, test bond. The Stanley Chemical Co., 1338 Berlin St., East Berlin, Conn.

139. Immersion Heaters
Steel, stainless steel and translucent-fused-quartz immersion heaters are described and illustrated in a bulletin that includes information on Vapo-Vent, a venting system designed to prevent explosions, and Neo-Tite, a sealing system that prevents damage in case of accidental immersion of the entire assembly. N. J. Thermex Co., Inc., 537 Bergen St., Harrison, N. J.

140. Barrel Plating Equipment
A 12-page bulletin on the Udylite line of barrel plating equipment describes plastic cylinders, cluster barrels, multiple-barrel units, complete barrel plating systems, storage and transfer units, dryers, final rinse units, other related equipment. Udylite Corp., Detroit 11, Mich.

141. Acrylic Coatings
Performance and application information on acrylic-based coatings. The Varnish Products Co., 5204 Harvard Ave., Cleveland, Ohio.

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- Decorative finish for business machines, hardware, television cameras, metal screens, machine parts.

Write for bulletin H-16. Park Chemical Co., 8074 Military Ave., Detroit 4, Michigan

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142. Complete Finishing Systems
Literature on Spra-Con complete finishing systems for applying organic coatings. Data on components such as washers, ovens, flow-coat machines, conveyors, air make-up systems. The Spra-Con Co., 3600 Elston Ave., Chicago 18, Ill.

143. Plating Rectifiers
Information on stock and custom-built germanium, silicon and selenium rectifiers. Cadillac Rectifier Div., R-E-P Electric Products, Inc., 571 Webster Ave., New Rochelle, N. Y.

144. Rectifier Replacement Assembly
Information on the Tri-Amp high-current-density rectifier-replacement assembly, used in modernizing old selenium rectifiers with units said to be more efficient, with longer life, supplying more current per cell. Radio Receptor Co., Inc., 240 Wythe Ave., Brooklyn 11, New York.

145. Bright Cyanide Copper Plating Process
Manual on McCoy's new 23-11 organic process for leveling bright cyanide copper plating, which is said to produce brilliant mirror-like deposits at current densities from one to 100 a.s.f. Electrochemical Products, Inc., 1760 Alverno Dr., Brookfield, Wisconsin.

146. Buffs
Data sheet describes Buff Type No. 20-RD, a heavy-duty buff made of sisal twine, used for finishing stainless steel, brass and other metals. Geo. R. Churchill Co., Inc., Dept. PF, Hingham, Mass.

147. Protecting Polished Surfaces
Information on Neotex, an open-pattern rubber matting that protects highly polished surfaces from scratching when it is used to line any surface where products with polished surfaces are worked on or are in transit. Open pattern permits buffing compounds to settle. Research Products Corporation, Dept. 76, Madison 1, Wisconsin.

148. Pearlescent Finishes
Information on Nacromer YNC, an additive that is used in standard organic finishes to produce a pearlescent finish. The Mearl Corporation, 41 E. 42nd St., New York 17, N. Y.

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News of the Finishing Industry

- company news
- new positions
- new plants
- meetings

NEW PLANTS

Carl H. Biggs Company Expands, Moves to New Plant

Carl H. Biggs Company, California manufacturer of epoxy bonding agents, sealants, coatings, molding compounds, adhesives and related products, recently moved into a new plant built for the company in Santa Monica, Calif.

The move is a result of rapidly increasing sales which made necessary additional production facilities, according to company officials.

Dow Dedicates New Waste-Disposal Plant

One of the world's finest industrial incineration plants has been installed at the home plant of The Dow Chemical Company in Midland, Mich.

Incorporating the newest concepts in industrial waste control, the six-acre plant was built at a cost of $2,250,000 to reduce air pollution by the giant chemical complex which produces 1,100 products in 600 buildings on a 4,500-acre site.

Dow's waste treatment plants now have a capacity to handle the equivalent of sewage from a city of 300,000 persons and the refuse of a city of 70,000. The refuse capacity could be doubled if necessary.

To keep air and water pollution from the Dow plant "under rigid control," the plant can dispose of a quarter-million pounds daily of refuse and tars.

More than 250 truckloads of liquid waste tars are produced in the plant

(continued on page 142)

New plant recently built for Carl H. Biggs Company in Santa Monica, California

WRITE AN ARTICLE

for the PRODUCTS FINISHING ELECTROPLATING INDUSTRY ARTICLE COMPETITION!

AWARDS

First Award:.....$500.00

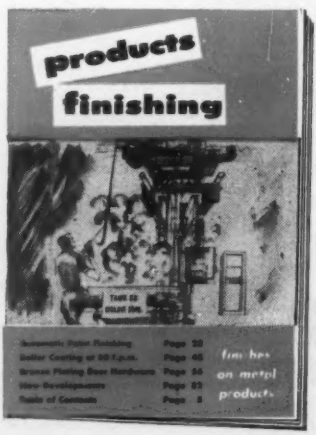
Second Award:.....$250.00

Five additional Awards:..$50.00 each

WRITE: a paper or article describing how a design, engineering, or manufacturing problem in your plant was solved by electroplating, or by use of an electroplate or an electroplating process; how plating or an electroplate improved your product or manufacturing efficiency.

WHO MAY ENTER: Anyone in a manufacturing plant in a design, engineering, process, production or executive capacity. Members of plating equipment or chemical supplier companies, distributors, and manufacturers representatives are excluded.

COMPETITION ENDS ON: **February 1, 1960.**



Sponsor of Competition:
PRODUCTS FINISHING

Author of the winning paper will be invited to present his paper before the A. E. S. Tri-State Regional Meeting in Cincinnati on April 23, 1960.

FOR MORE DETAILS WRITE TO:
Electroplating Industry Article Competition
c/o PRODUCTS FINISHING
431 Main St.
Cincinnati 2, Ohio

Rules governing the Article Competition are printed on the opposite page. ➧➧➧

RULES FOR PRODUCTS FINISHING ELECTROPLATING INDUSTRY ARTICLE COMPETITION

1. The article should describe how a design, engineering, or manufacturing problem in your plant was solved by electroplating, or by the use of an electroplate or an electroplating process; how plating or an electroplate improved your product.
2. The paper must include a full description of the problem and its difficulties together with a complete description of the method used in solving it. Complete process details should be given. Illustrations and before-and-after photographs should be included.
3. The problem discussed must have been solved and the solution put into practical use since December 31, 1956.
4. The article or paper must be an original article, not published elsewhere (with the possible exception of an internal company magazine or engineering department specification, for example). In such cases, the author must provide reference to other publication of the material.
5. The paper should include the annual dollar savings resulting from the change, if this figure is applicable, or if it can be released. The paper should describe fully the improvement made in the product or process, by the electroplating method.
6. The contest is limited to those in a manufacturing plant in a design, process engineering, finish engineering, production, or executive capacity. Members of plating equipment or chemical supplier companies, distributors and manufacturers representatives are excluded.
7. More than one author can collaborate in the preparation of a paper. Any award will be divided equally.
8. In case of ties, awards will be divided equally.
9. Each author must obtain clearance from his company so that the paper, with illustrations, may be published in a technical, business, or trade magazine, including any of those published by the sponsor of this contest.
10. All papers submitted become the property of PRODUCTS FINISHING*, and may be published without obligation to the author.
11. No paper can be returned.
12. Papers must be submitted before February 1, 1960.
13. Papers will be judged by a panel of five judges to be selected by the sponsor. Decision of the judges will be final.
14. Papers will be judged on the basis of:
    1. Value of the process described to the plating industry.
    2. Value of the process described to the author's company or employer.
    3. Novelty and originality.
    4. Improvement in product appearance and utility or manufacturing efficiency which resulted from the adoption of the plating method or process.
    5. Completeness of information; how product or process was improved.
    6. Arrangement of material, style of presentation. Manuscript should be typed, double-spaced, and should be submitted with necessary photos and diagrams.
15. Each author must furnish as a reference some officer of his company to whom the judges may direct an inquiry regarding the process or method described.
16. None of the judges, the sponsor, or any publishing company publishing an award-winning paper, and any of its accompanying illustrations (photographs or otherwise) shall be liable for any patent infringement resulting from disclosure of processes, methods or techniques or for any unauthorized use of any process, method or technique disclosed in any of the papers, including illustrations (photographic or otherwise) submitted.

*Published by Gardner Publications, Inc.

weekly, plus 1,700 drums of semi-liquid and solid waste chemicals and 17,000 cubic yards of other refuse per month.

The new plant is the third major unit in what is believed to be the largest industrial waste plant in the world.

The other units are a $5 million biological waste treatment plant for the treatment of waste waters from the plant, and a $2½ million brine wastes facility covering an area of 400 acres.

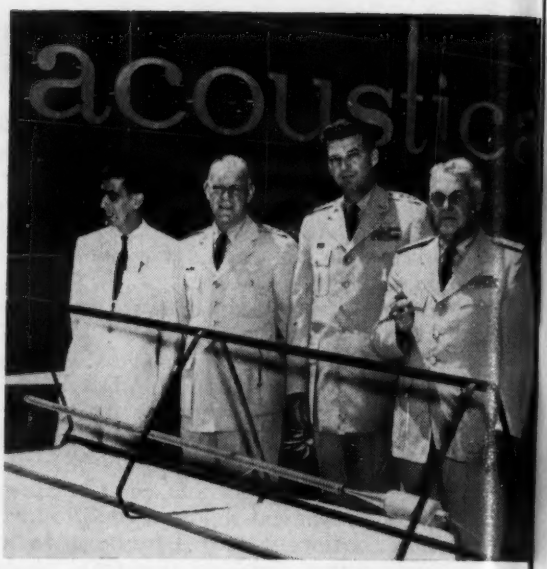
More acreage is devoted to waste disposal at Dow's Midland plant than to manufacturing operations.

Dow Louisiana Division to Expand

The Dow Chemical Company's Louisiana Division, at Plaquemine on the Mississippi River, has announced a 12-million-dollar plant-expansion program.

Engineering and construction work will start immediately, according to Dr. A. P. Beutel, vice-president in charge of Dow's Gulf Coast operations.

The expansion program includes construction of a polyethylene plant and facilities to produce vinylidene chloride and Chlorothene.



Acoustica Associates, Inc., recently opened a new plant in Plainview, Long Island, New York. Acoustica manufactures ultrasonic equipment. Participating in the opening ceremonies, (left to right) are Robert L. Rod, president of Acoustica Associates, Inc.; Lt. General William Hall, USAF, commander of the Continental Air Command; Lt. General Bernard A. Schriever, U.S.A.F., commander, Air Research and Development Command; and Vice Admiral William G. Cooper, USN, commander, Antisubmarine Defense Force, U. S. Atlantic Fleet. Admiral Cooper is about to press the button on one of Acoustica's new ultrasonic devices. The silent ultrasonic energy released from one end of the device was used to cut the ribbon to officially open the plant.

★ ★ ★

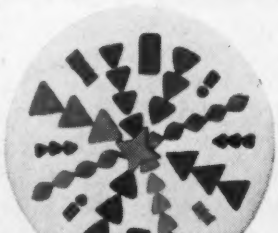
Blakeslee Opens Two New Shipping Points

G. S. Blakeslee & Co., Chicago, Illinois, recently added two new drumming and distribution centers for

Introducing

FORTUNE

BARREL FINISHING MEDIA FOR ANY TUMBLING NEED!



No jamming, or "rolling over" action.

Special shapes prevent jamming and rapid deburring saves costs.

Write for complete information.

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11770 DEXTER RD. CHELSEA, MICH.

Chelsea Phone—GR 9-3621

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Blacosolv trichlorethylene degreasing solvent: one at San Pedro, California, and one at Carteret, New Jersey.

The California shipping point will serve West Coast locations. The Carteret plant will ship to eastern Massachusetts, Connecticut, Rhode Island, southeastern New York, New Jersey, eastern Pennsylvania and eastern Maryland.

Two other Blakeslee shipping points, at Wyandotte, Michigan, and Niagara Falls, New York, serve other areas.

Bell-Ray Expands to New Quarters

Bell-Ray Chemical Corporation, Chicago manufacturer of metal conditioners and related products, has moved to larger quarters in Milwaukee, Wisconsin. Frederick Reich, president of the firm, announced that sales representatives will be added to those already serving the company as part of the expansion program.

Mitchell-Bate Moves to Larger Plant

Mitchell-Bate Co., Waterbury, Conn. manufacturer of racks for plating, anodizing and painting, has moved into larger facilities, at 1040 S. Main St., Waterbury.

The move will allow the company to expand production of its racks and related products, according to Ray L. Mitchell, partner in the company.

Diamond Alkali Opens New Chlorine-Caustic Soda Facilities

Diamond Alkali Company began to operate its chlorine-caustic soda plant expansion at Deer Park, Texas, on June 15. The initial operating rate of the new facility will be in excess of 50 per cent of capacity.

The new facility brings the capacity of the company's entire Deer Park Works to a nominal 750 tons per day of chlorine with a concurrent capacity of about 825 tons of caustic soda and 7,500,000 cubic feet of high purity hydrogen.

COMPANIES

Pennsalt Announces Complete Metal Processing Service

A complete metal processing service, ranging from the design, installation and service of a variety of metal preparation and finishing machines to the compounds and chemicals themselves, is now being offered to the industry by Pennsalt Chemicals Corp.

Announcement of the addition of a line of Pennsalt machines was made at the Industrial Finishing Exposition held in Detroit, June 16 to 19.

The equipment in the Pennsalt line runs from small agitating washers and wash-and-rinse cabinets, the only standard models offered, to large phosphatizing machinery, spray coaters, dryers and other machines which are custom-designed for each manufacturer's specific needs.

To page 146→

SPRAY MASKS
REDUCE YOUR MASKING COSTS BY USING INEXPENSIVE, HEAT RESISTANT
KWIKY-DOTS
A raised edge is automatically provided on each disc for easy grasping. Connected strings of several discs may be removed for fast application. Stock Size: ⅛" up.
NARROW MASKING TAPES
Precision cut to any size from 1/32" up. In standard 60 yd. rolls.
Send for literature and samples.
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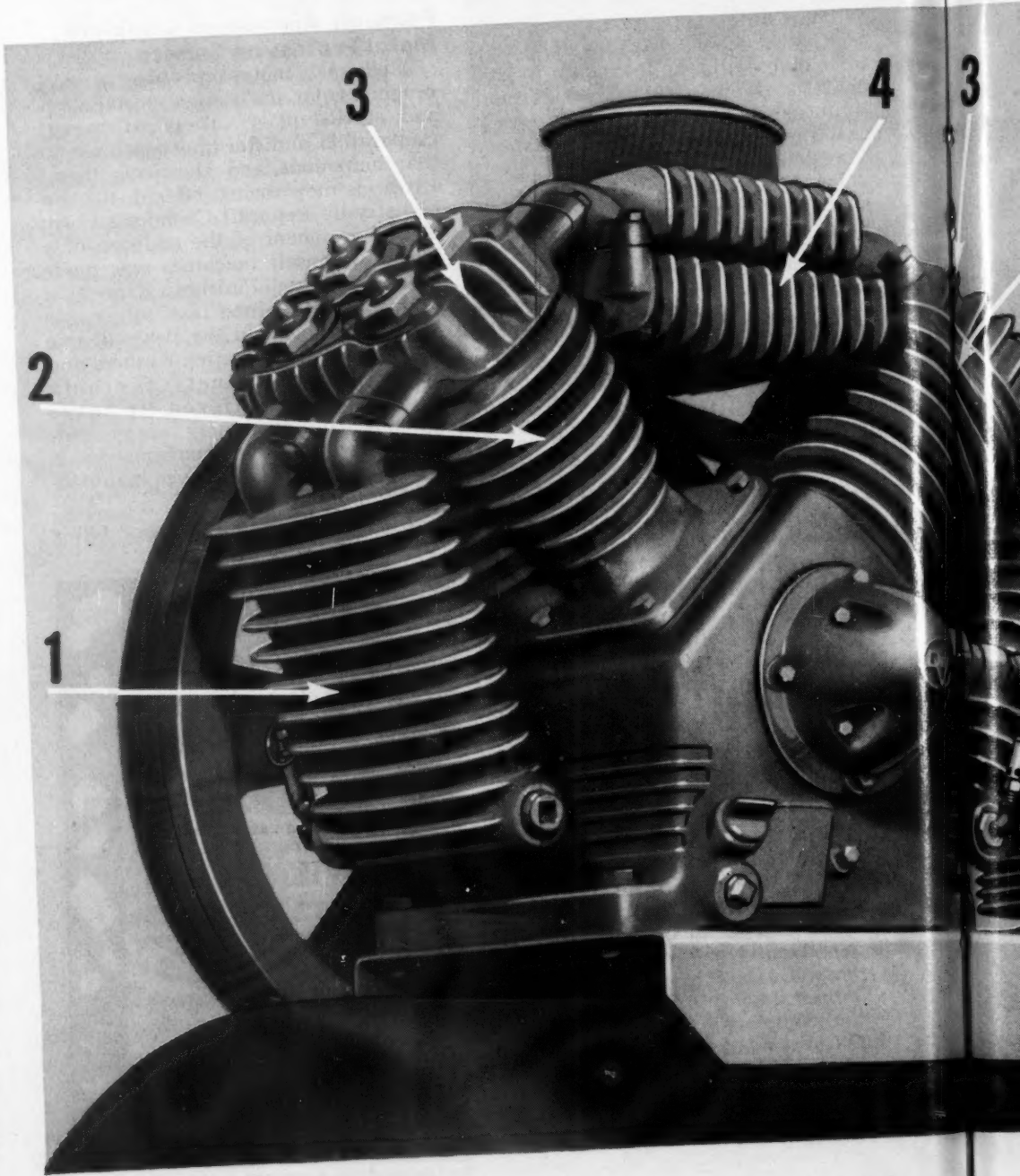
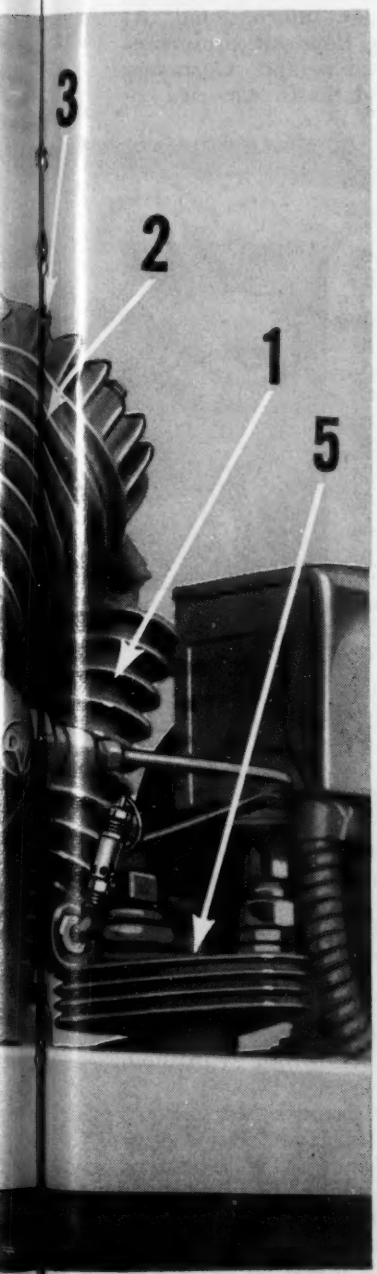
More finned cooling area makes



DeVilbiss compressors more efficient



1. **Finned Intercoolers**
2. **Finned Cylinder Walls**
3. **Finned Cylinder Heads**
4. **Finned Aftercooler**
5. **Finned Check-Valve Manifold**

The cooling system of a compressor makes a big difference in operating efficiency. The hotter the air delivered into the tank, the greater the shrinkage when it cools. A cool-running compressor delivers low-temperature, less-expanded air to the tank, resulting in fewer running cycles for any air demand.

DeVilbiss compressors with their greater finned cooling area deliver air to the tank at lower temperature. Result: less air shrinkage in the tank, less frequent running cycles, less power consumption.

Notice the finned, cast-iron intercoolers (1), with large-capacity chambers which retard velocity of air to permit a longer cooling cycle between compressing stages. Deeply finned cylinder walls (2) and heads (3), for rapid, thorough heat dissipation. Finned aftercooler (4), that lowers temperature further before air enters tank. Even the check-valve manifold (5) is finned for maximum aftercooling.

Send for Catalog C-51, or call the local DeVilbiss representative for all the facts.

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TOLEDO 1, OHIO
Barrie, Ontario • London, England
São Paulo, Brazil
Branch Offices in Principal Cities

FOR BETTER SERVICE, BUY
DE VILBISS

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Pennsalt now has available manufacturing facilities in the three major sections of the country—the eastern seaboard, middle and far west—and in Canada as well. Members of a staff of 45 sales-servicemen are located in all parts of the country to assist industries in analyzing their individual needs, in installing new equipment and in training personnel. Periodic check-ups, with recommendations for improved operation, are also carried out by these specialists. In addition, laboratory analyses of any surface preparation problems may be obtained through the Pennsalt staff.

All Pennsalt machines are designed to meet the needs of modern, high-speed processing. Individual units feature compact design to save floor space and to afford easy accessibility for quick adjustment. Two or three or more machines can be joined by conveyors to give automatic or nearly automatic operation to different finishing cycles or finishing systems.

The same equipment and service is now available to industries overseas through Pennsalt International. At the present time, Pennsalt equipment is being sold in England, Germany, Italy, Mexico and South America.

TRUE BRITE BRASS SOLUTION

A foolproof solution which has been in use for over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
- Trouble-Free—Little Supervision Needed
- Low Cost—Additions only once a day

Available in a variety of colors. Will match your sample.

Write for technical bulletin and prices.

TRUE BRITE CHEMICAL PRODUCTS CO.
Box 31, Oakville, Conn.

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Schaffner Opens Cleveland Office

Schaffner Manufacturing Co., Inc., Pittsburgh manufacturer of buffs, buffing compounds and related products, has opened an office to serve the Cleveland area at 2614 Grovewood, Parma, Ohio. Robert J. Pinchot is in charge of the new office.

Robert J. Pinchot

Industrial Filter Holds Sales Training School

Industrial Filter & Pump Mfg. Company recently held its annual Sales Training School.

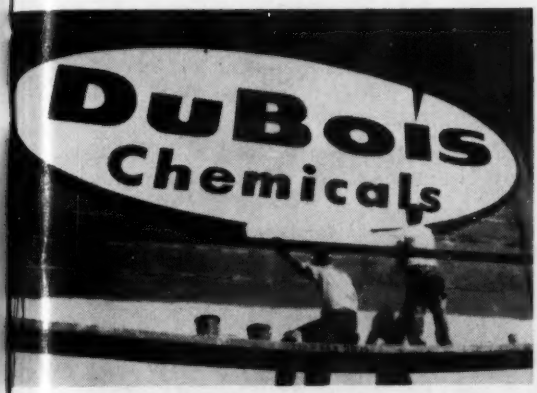
Attending the series of lectures, movies and demonstrations were representatives from most of the 49 states and several foreign countries.

James F. Zievers, vice president of Industrial made the opening address to this group. Industrial's specialists in the fields of filtraton and water and waste treatment gave lectures in their respective fields.

Other lecturers besides Mr. Zievers were: T. Sward, R. Riley, W. Wallin, B. Durham, F. Macioce, W. Engman, L. Danek, K. Odland, R. Baxa, R. Gray, S. Clements and R. Little. Assisting in the demonstrations was C. Novotny.

DuBois Adopts New Trade Mark

DuBois Co., Inc., Cincinnati manufacturer of cleaning compounds, has adopted a new trade mark, to be used on the company's packages and in its advertisements and literature.



New red and black trade-mark for The DuBois Co., Inc., makes its appearance on the Cincinnati skyline as sign painters paint the new symbol on the Cincinnati plant.

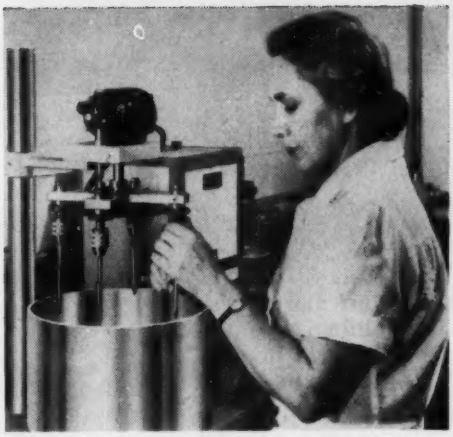
The change, according to company officials, signifies DuBois' diversification into the broader chemical field in addition to its place in the soap and detergent manufacturing business.

The company also announced that it will move its general offices into new quarters at 643 Broadway, Cincinnati.

Reliance Varnish Establishes Rel-Rez Division

Reliance Varnish Company has opened a new division in Louisville, Kentucky. It will be named the Rel-Rez Division and will market alkyds, epoxies, polyesters, copolymers and other coating resins on a nation-wide basis.

Manager of the new division will be Harald S. Julsrud. Howard C. Woodruff will be technical director and James S. Stevenson sales manager.



Precious metals electroplates are tested for wear resistance on this rotary abrasive device developed by Sel-Rex Corporation for use in its own laboratories. Mrs. Grace Wilson, laboratory technician, adjusts pen caps that have been plated with various gold formulations. The device will determine relative wear resistance of the different electroplates. (Photo courtesy Sel-Rex Corporation)

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American Pipe and Nukem Merge

American Pipe and Construction Co., Monterey Park, Calif., and Nukem Products Corporation, Buffalo, N. Y., have merged. The move provides increased facilities on two coasts for the activities of each company in the field of corrosion-resistant products. Announcement was made jointly by Robert V. Edwards, chairman of the board and president of American, and William Schoellkopf, representing the board of Nukem.

Under the new arrangement, Nukem will be closely allied with Amercoat Corporation, an American subsidiary headquartered in South Gate, Calif., since the two companies produce complementary products designed to solve corrosion problems in the metal trades. Nukem specializes in acid-proof cements and the design of acid-resistant floors and brick-lined tanks. Amercoat manufactures corrosion-resistant materials including protective coatings, reinforced plastic pipe and plastic membranes.

General direction of both Amercoat and Nukem will be unified under G.

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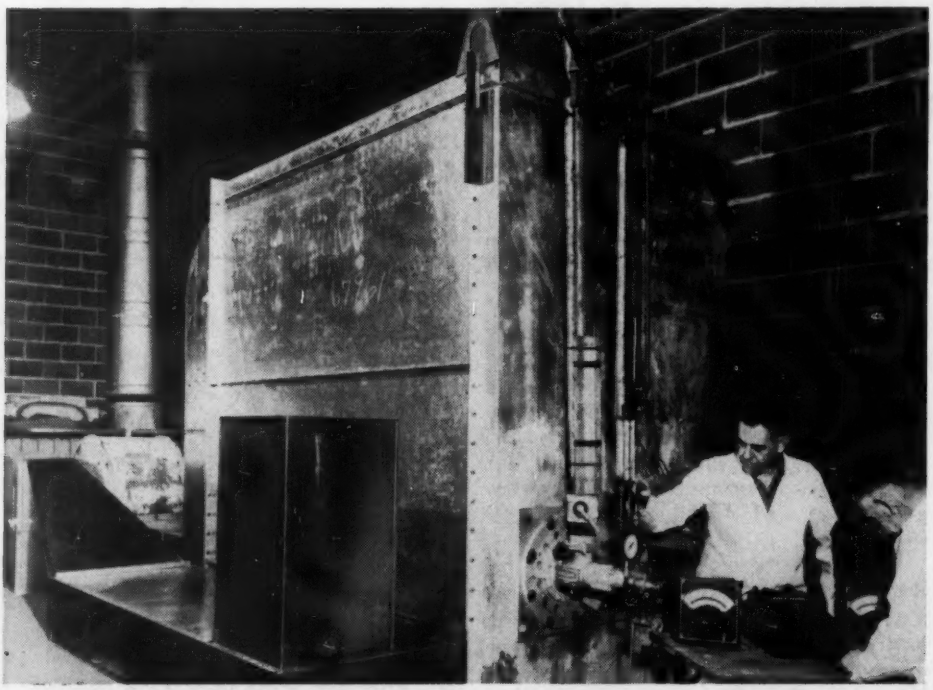

This 2,000,000-Btu. indirect, oil-fired oven heater is being tested under simulated conditions by engineers of The R. C. Mahon Co.'s Industrial Equipment Division, Detroit. It is the second of its type to be shipped to Multibras Co. of Sao Paulo, Brazil, for use as part of a complete finishing line for appliances. These are the first large "package" units to use Mahon's new heating arrangement—stemming from a unique manifolding system and a method of handling large volumes of air. Both heaters are front-fired, can handle air up to 36,000 c.f.m. each at a delivery temperature of 500 deg. F., and can readily be adapted for gas as a fuel. Like the previous unit shipped, this 7 by 5 by 7-foot heater weighs about 3,000 pounds, requires no brickwork for installation, is "ready to go."

E. Seidel, executive vice president of Amercoat, while John W. Chandler, formerly president of Nukem, will retain responsibility for the operation of the Buffalo plant and the sale of Nukem products.

New Department at Pittsburgh Plate Glass

Pittsburgh Plate Glass Company's paint division has established a new commercial development department.

Dr. Elmer C. Larsen

According to C. Robert Fay, vice president, the principal functions of this department will include market research and development of new products. The new department will have as an overall objective the future growth of the division.

Dr. Elmer C. Larsen has been appointed director of commercial development. Prior to joining Pittsburgh Plate in this new position, Dr. Larsen was associated with the J. T. Baker Chemical Company where he served as vice president and technical director and as a member of the board of directors.

New Manufacturer of Racks, Corrosion-Resistant Equipment

Vulcanium Corporation, a new company that will manufacture titanium racks and corrosion-resistant equipment for the finishing industry, has opened a plant at 3080 Skokie Valley Highway, Highland Park, Ill.

President of the new firm is James K. Trinz, specialist in developing racks and racking systems. Mr. Trinz indicated that Vulcanium will begin to market several new types of adjustable racks immediately.

Immediately following the Annual Convention and Finishing Exposition held by the American Electroplaters' Society, Clyde H. Reeme, president of The Udylite Corporation, drew the winning ticket from a barrel containing 800 tickets signed by people in the electroplating field. In the presence of Robert C. Trees, director of advertising, the prize winning ticket, signed by Lewis F. Dietrich, of the Ford Motor Company in Monroe, Michigan, was drawn by Mr. Reeme. Mr. Dietrich was advised of his good fortune and the prize, a color TV set, was then delivered.

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Hydra-Blast Appoints New Distributors

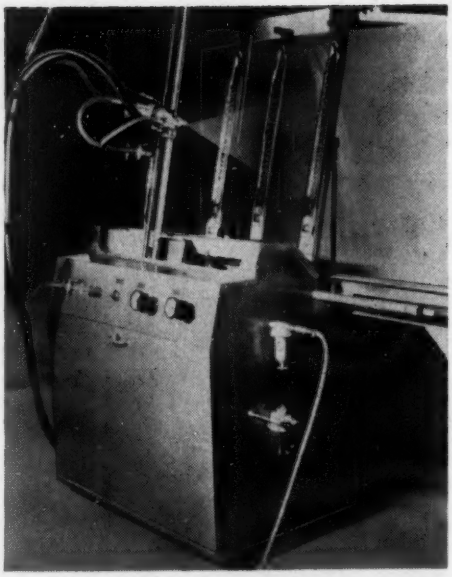
New representatives for Hydra-Blast equipment and products are Waldron Company, North Haven, Conn., for the New England States, and General Supply & Equipment Co., Cleveland, Ohio.

Infrared Oven Bakes Finish on New Aluminum Homes

DriQuik infrared electric ovens are playing an important role in the production of the new Viking aluminum homes introduced recently by National Homes Corp., Lafayette, Ind.

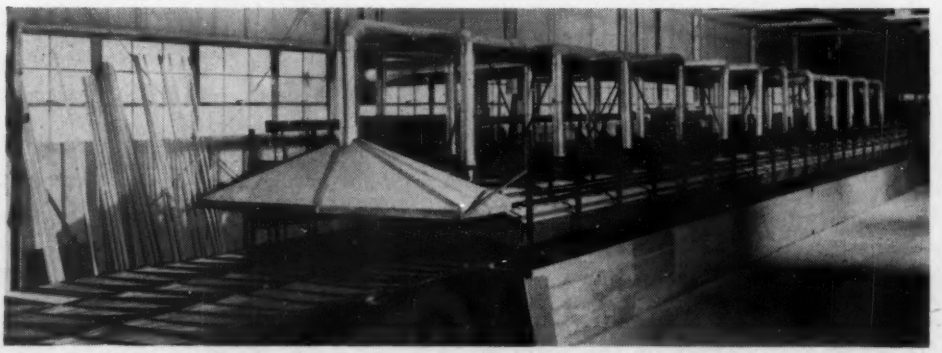
An 84-foot-long driQuik oven is being used for baking high-temperature synthetic enamels on aluminum shingles, roofs, side walls and aluminum siding. This driQuik infrared oven can bake the finish on 25,000 square feet of aluminum shingles in an eight-hour shift.

Temperature is controlled accurately in 16 different temperature zones in this oven by means of cyclical temperature controllers. They make it possible to bake articles with various heat requirements in a single oven. The temperature in each zone can be set from 0 to 100 per cent of rated power and to within one degree of the temperature desired, merely by turning a knob.

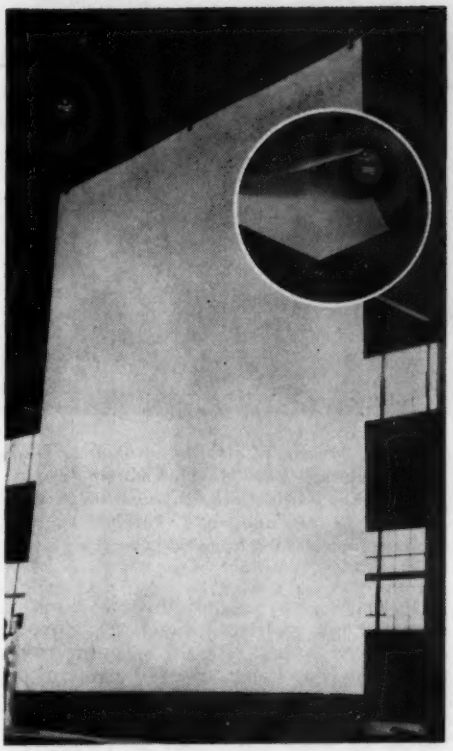


This automatic painting machine manufactured by Dumatic Devices, Inc., automatically paints a name-plate for one of the nation's mass-produced trucks. The machine is tied in with the conveyor line. It picks up the masked part as it goes by at the rate of 16 f.p.m. The spray guns make one pass up and one pass down parallel to the part as the gun assembly moves along with the conveyor. The assembly then disengages and returns to pick up the next part. The machine is set to skip any station that holds no part.

★ ★ ★



This 84-foot-long infrared oven bakes the finish on aluminum siding and shingles for new aluminum homes being produced by National Homes in its Lafayette, Indiana, plant.



This is the widest steel sheet ever produced. It measures 205 by 160 inches. Lukens Steel Company rolled it for use in solid-propellant rocket-motor casings. To protect the surface from scratches, die marks and weld splatter during shipment and fabrication, Lukens sprays on Liquid Envelope strippable coating, a product of Better Finishes and Coatings, Inc. When fabrication is complete, strip coating can be torn off in big sheets. (Photo courtesy Better Finishes and Coatings, Inc.)

★ ★ ★

Armalite Builds New Plant

Armalite Company Limited is constructing a manufacturing plant and office building in Toronto on Queen Elizabeth Boulevard South.

Armalite supplies chemicals, equipment, and processes to the finishing industry. Among the products that will be made in the new plant are nickel anodes, buffing and polishing compounds, alkali cleaners, plating tanks, rectifiers, vapor degreasers and plating barrels.

Magnus Chemical Co. Appointed Perfecto-Peen Sales Representative

Magnus Chemical Co., Inc., Garwood, N. J., has been appointed a sales representative by Perfecto-Peen, Division of Aero-Test Equipment Co., Dallas, Texas. In making the announcement, Bill Solley, Aero-Test president and general manager, said Magnus will sell products for his firm's new process of glass-jet peening.

"This process produces the stress-relieving benefits usually associated with peening," said Mr. Solley, "and in addition both cleans and finishes metal surfaces."

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These Magnus representatives attended a technical session at Perfecto-Peen's Dallas headquarters. Left to right: Alexander Simpson, Robert L. Kraber, Harold E. Kilhefter, Allen V. Ellison, Harry M. Herlikofer, Pete Peterson, Robert W. Horton, Bill W. Solley, Bernie Bailey, Bill Mays, Kenneth Bishop, Greg Macri, Jerald Gore, Raymond E. Weigle, Howard K. Norman, and Raleigh Estrada. Magnus reps will sell Perfecto-Peen equipment.

Bill Mays, Magnus vice president and technical director in charge of research, and Pete Peterson, vice president in charge of sales, headed a team of 13 Magnus representatives who recently attended a week-long technical and sales seminar at Perfecto-Peen's Dallas headquarters.

Magnus will represent Perfecto-Peen in Connecticut, Delaware, Maine, Maryland, Massachusetts, New Jersey, New Hampshire, New York, Pennsylvania, Rhode Island, Vermont, Virginia and West Virginia.

NEW POSITIONS

Several changes in the management of **The McGean Chemical Company** have been announced by **Ralph L. McGean,** newly elected president. He succeeds the late John A. McGean, an associate of John D. Rockefeller and president of Harshaw-Fuller and Goodwin Company, forerunner of Harshaw Chemical Company. Mr. McGean founded McGean Chemical in 1929. Ralph L. McGean has been vice president and general manager of McGean Chemical since its founding.

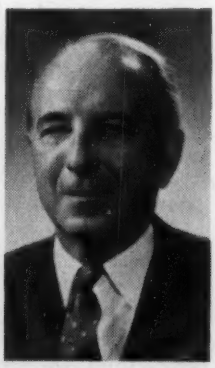
Paul M. Savage, who has been a director as well as secretary, and in charge of sales since the company's founding, has been elected vice president.

Dickson L. Whitney will continue to serve as a director and as treasurer.

Robert H. Louden has been elected secretary. Mr. Louden also will assume the position of sales manager, assisted by Mr. Whitney.

Dr. Harry J. Beckemeyer has joined McGean Chemical, will be in charge of ceramic sales.

Dickson L. Whitney



Ralph L. McGean

Robert H. Louden

Paul M. Savage

Wayland E. White

Ben P. Fortin

Walter L. Pinner will serve as manager of Electroplating Development. Mr. Pinner, previously with Houdaille Industries, is the author of 50 technical papers on electroplating and nickel subjects, and has been responsible for many major developments in this field. He recently presided at the International Conference on Electrodeposition and Metal Finishing in Detroit.

★ ★ ★

Oakite Products, Inc., has announced two transfers and two new appointments in its technical field service organization. **Ben P. Fortin** moves from Tyler, Texas, to Los Angeles. **Henry L. Jones** replaces him in Tyler.

Henry L. Jones

J. G. Hickey

J. G. Hickey transfers from San Francisco to Sacramento, Calif. **Wayland E. White** has been appointed to the Corpus Christi territory.

★ ★ ★

William P. Ziegler, Jr., appointed national sales manager, **Kolene Corporation.**

ALL-TITANIUM

ANODE SCRAP-SAVER

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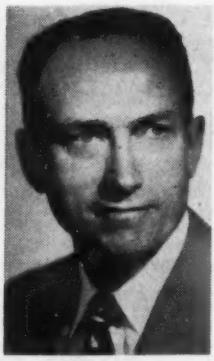
L. M. Gill

A. C. Towne

B. C. Smith



Ralph W. Bailey

Fred J. Baechtold, Jr.

Robert L. Egbert

G. S. Blakeslee & Co. appointed **R. B. Thompson** sales engineer for the St. Louis area.

Promotions at **Michigan Oven Company,** Detroit, include **A. C. Towne,** formerly president, to chairman of the board; moving up to president from sales manager is **L. M. Gill**; new vice president **C. A. Windsor** was formerly in charge of Wire and Wire Products department; and secretary-treasurer **B. C. Smith** was promoted from secretary and chief design engineer.

★ ★ ★

Ralph W. Bailey named assistant general sales manager of **Federated Metals Division of American Smelting and Refining Company.** Mr. Bailey will retain his present position as sales manager of Asarco's Continuous-Cast Products Department.

★ ★ ★

The Carborundum Company has promoted three men in the Research and Development Division. **Donald G. Sturges,** formerly manager of the New Products Development Branch was promoted to associate director of the Research and Development Division; **Frederick J. Ross, Jr.,** formerly manager of the Ceramic Fiber Project was promoted to manager of the New Products Development Branch to succeed Mr. Sturges; **Dr. Wingate A. Lambertson** was promoted from assistant to the manager to assistant manager of the Engineering Research Branch.

★ ★ ★

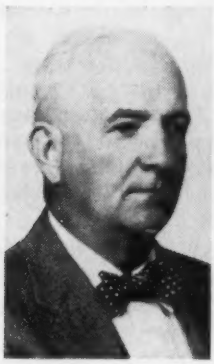
Dixon Sintaloy, Inc., appointed **Robert L. Egbert** assistant to the sales manager and **Fred J. Baechtold, Jr.,** supervisor of the Eastern Sales Division.

★ ★ ★

Dow Chemical International S.A. enlarged its executive staff. **Max Key,** plastics production manager of the Dow Midland Division has been appointed operations vice president. **A. M. Griswold,** vice president of Dow International, and **E. K. Stilbert,** manager of coatings materials for the Dow Plastics Department, were named product group vice presidents.

Apex Alkali Products Company appointed **Leon P. Moynihan, Jr.**, to its sales staff, to cover Massachusetts, Rhode Island, Maine, Vermont.

L. P. Moynihan, Jr.



Dariel E. Miller

Dariel E. Miller appointed sales manager for **Kelite Corporation's** San Francisco District.

★ ★ ★

P. H. Coleman appointed regional sales manager, **OPW-Jordan Corporation,** Cincinnati, Ohio.

Arthur R. McNeil

P. H. Coleman

Arthur R. McNeil elected to board of directors, **MacDermid, Inc.** Mr. McNeil will continue to serve the company as New England sales manager.

W. Vandeveer

Severn Carlson

Wellington Vandeveer becomes president of **Circo Equipment Company,** succeeding **Melville Morris,** who resigned from the company. **Severn Carlson** has been named to direct sales activities for both Circo Equipment and its newly formed subsidiary, **Circo Ultrasonic Corporation. Benson Carlin** has been appointed executive vice president of the subsidiary.

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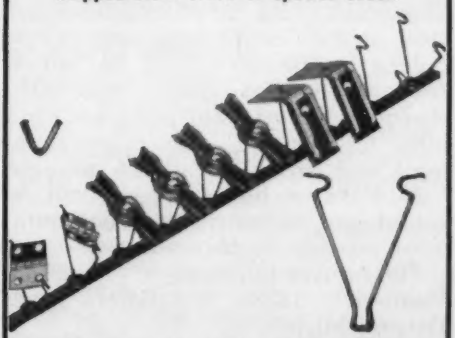

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Richard D. Taylor, Phoenix, New York, appointed regional manager for the Eastern Division of **Techline Division of Wheelabrator Corporation,** Vicksburg, Michigan. Mr. Taylor will supervise Cleveland, Cincinnati, Buffalo, New England States, Metropolitan New York, and Philadelphia.

SOCIETIES

Upper Midwest Metal Finishing Associated Formed

Organization of the Upper Midwest Metal Finishing Association has been announced. The technical organization, comprised of over 90 persons engaged in metal finishing in the area comprising Western Wisconsin, Northern Iowa, North and South Dakota, and Minnesota. The new group will hold monthly meetings on the first Monday of each month from October through June with the meetings held at Jax Cafe, 20th and University Ave., N.E., in Minneapolis.

Program for each meeting will include a dinner at 7:00 P.M., followed by a technical session.

Detroit A.E.S. Stag Day This Month

The Detroit Branch of the American Electroplaters' Society, will have its annual "Stag Day" on August 22, 1959, at the Glen Oaks Country Club.

John B. Hitchcock, E. I. duPont de Nemours & Co., (Inc.), Stag Day chairman, reports that plans are complete for contests, golfing, entertainment and prizes for all the winners.

A delicious buffet supper will be served and an outstanding entertainment program is planned.

For further information write A. J. Emmerich, 14325 Wisconsin Ave., Detroit, Mich.

Vincent Vesce Named Mattiello Lecturer

Vincent C. Vesce, technical director for Harmon Colors, National Aniline Div., Allied Chemical Corp., will present the Annual Joseph J. Mattiello Memorial Lecture before the 37th Annual Meeting of the Federation of Paint and Varnish Production Clubs. This meeting will be held in Atlantic City, N. J., October 22-24.

The subject of Mr. Vesce's lecture will be *Exposure Studies of Organic Pigments in Paint Systems.*

Being selected to present the Mattiello Lecture is one of the paint industry's highest awards. Mr. Vesce was selected on the basis of his impressive achievements in organic pigment chemistry and technology.

TRAINING COURSES

Kushner Electroplating School Moves to Larger Quarters

The Joseph B. Kushner Electroplating School, home of the "Electroplating Know How" correspondence course in electroplating, has moved its offices to 621 S. Norman, Evansville 14, Indiana. The new quarters, larger than the previous offices, will permit the use of a more efficient arrangement of student records and office equipment. The school's mailing address will continue to be Box 2066, Evansville 14, Indiana.

The school will be closed for vacation during August and the first week of September.

Toronto Electroplating Course Stresses Principles and Practice

For more than 20 years a course in electroplating has been conducted in the city of Toronto. The course is now given at Central Technical School. Classes are held one night per week, beginning the first week in October and extending through the last week in March. Tuition fee is $15.00 for people who live outside Toronto and $5.00 for residents.

Although sponsored by the Toronto Branch of the American Electroplaters' Society, the course falls with-

in the jurisdiction of the Adult Educational Division of the Toronto Board of Education.

The Toronto Branch of the A. E. S. provides a $25.00 scholarship to the most outstanding student of the year and supplies equipment.

A. R. Moores, assistant chief chemist, Canadian Hanson & Van Winkle Company, Ltd., has served as instructor for the course during the past seven years.

The course, as indicated in the outline which follows, is a lecture course to which have been added demonstrations and experiments along with slide-projected illustrations, movies, Hull Cell panels and bent cathodes illustrating plating defects caused by various unsatisfactory plating conditions, and other visual presentations.

Emphasis is on subjects of a practical nature, since the course is attended very largely by practical platers with a sprinkling of foremen, salesmen, and superintendents. Since the majority of those attending are not chemically or technically trained men, the lab course has been eliminated.

Topics discussed in the course are as follows:

1. Introduction to Terms and General Principles.
2. Brief Outline of the Principles of Chemistry that are Important in Electrodeposition.
3. Principles of Electricity and Electrochemistry Related to Electroplating.
4. Character of Electrodeposits.
5. Selection, Specification and Inspection of Electrodeposits.
6. Preparation of Metals for Electroplating.
7. Electrical Equipment.
8. Tanks and Related Equipment.
9. Constitution of Plating Baths.
10. Copper, Silver and Gold Plating.
11. Zinc and Cadmium Plating.
12. Tin and Lead Plating.
13. Chromium Plating.
14. Nickel Plating.
15. Alloy Plating.
16. Anodizing.
17. Control of Solutions.

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MEETINGS of INTEREST to FINISHERS

August 22. Stag Day, Detroit Branch, A. E. S., Detroit, Mich.

Sept. 7-10. 62nd Annual Convention, International Association of Electrotypers and Stereotypers, Inc., Biltmore Hotel, New York, N. Y.

Oct. 7-9. Sixth National Symposium on Vacuum Technology, American Vacuum Society, Sheraton Hotel, Philadelphia, Pa.

Oct. 18-22. Fall Meeting, The Electrochemical Society, Deshler-Hilton Hotel, Columbus, Ohio.

Oct. 21-24. 37th Annual Meeting and 24th Paint Industries' Show, Federation of Paint and Varnish Production Clubs, Convention Hall, Atlantic City, New Jersey.

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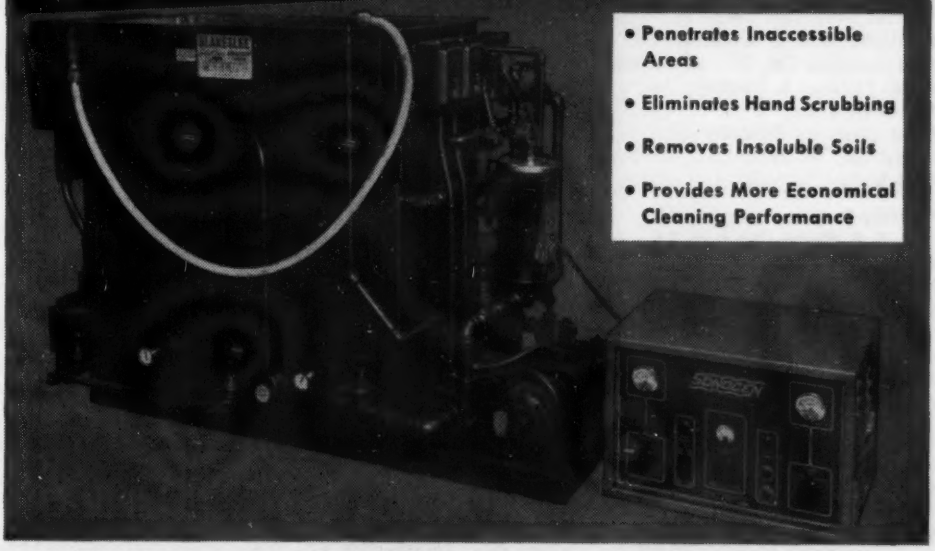

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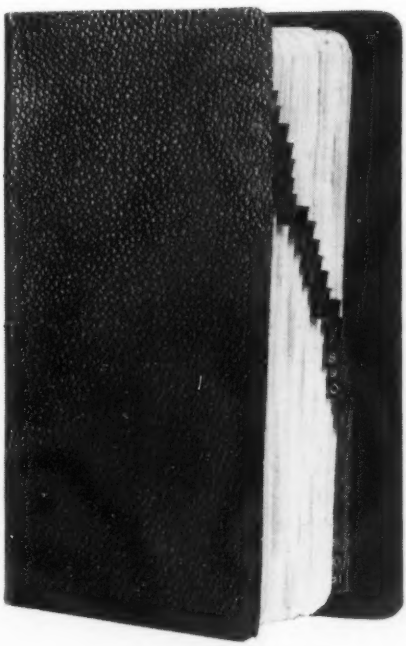

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